Appendix A

Public Law 92-426
92nd Congress H. R. 2
September 21, 1972

An Act

To establish a Uniformed Services University of the Health Sciences and to provide scholarships to selected persons for education in medicine, dentistry, and other health professions, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That this Act may be cited as the "Uniformed Services Health Professions Revitalization Act of 1972".

Uniformed Services Health Professions Revitalization Act of 1972.
86 Stat. 1064.
10 USC 2101.

SEC. 2. (a) Title 10, United States Code, is amended by adding the following new chapters after chapter 103:

Chapter 104. — UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

Sec.
2112. Establishment.
2113. Board of Regents.
2114. Students: selection; status; obligation.
2115. Graduates: limitation on number permitted to perform civilian Federal service.
2116. Reports to Congress.
2117. Authorization for appropriations.

2112. Establishment

(a) There is hereby authorized to be established within 25 miles of the District of Columbia a Uniformed Services University of the Health Sciences (hereinafter referred to as the "University"), at a site or sites to be selected by the Secretary of Defense, with authority to grant appropriate advanced degrees. It shall be so organized as to graduate not less than 100 medical students annually, with the first class graduating not later than 10 years after the date of the enactment of this chapter.

(b) Except as provided in subsection (a), the numbers of persons to be graduated from the University shall be prescribed by the Secretary of Defense. In so prescribing the number of persons to be graduated from the University, the Secretary of Defense shall, upon recommendation of the Board of Regents, institute actions necessary to ensure the maximum number of first-year enrollments in the University consistent with the academic capacity of the University and the needs of the uniformed services for medical personnel.

(c) The development of the University may be by such phases as the Secretary of Defense may prescribe, subject to the requirements of subsection (a).

Appendix A

2113. Board of Regents

(a) The business of the University shall be conducted by a Board of Regents (hereinafter referred to as the "Board") with funds appropriated for and provided by the Department of Defense. The Board shall consist of—

(1) nine persons outstanding in the fields of health and health education who shall be appointed from civilian life by the President, by and with the advice and consent of the Senate;

(2) the Secretary of Defense, or his designee, who shall be an ex officio member;

(3) the surgeons general of the uniformed services, who shall be ex officio members; and

(4) the person referred to in subsection (d).

(b) The term of office of each member of the Board (other than ex officio members) shall be six years except that—

(1) any member appointed to fill a vacancy occuring before the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term;

(2) the terms of office of the members first taking office shall expire, as designated by the President at the time of the appointment, three at the end of two years, three at the end of four years, and three at the end of six years; and

(3) any member whose term of office has expired shall continue to serve until his successor is appointed.

(c) One of the members of the Board (other than an ex officio member) shall be designated by the President as Chairman. He shall be the presiding officer of the Board.

(d) The Board shall appoint a Dean of the University (hereinafter referred to as the "Dean") who shall also serve as a nonvoting ex officio member of the Boad.

(e) Members of the Board (other than ex officio members) while attending conferences or meetings or while otherwise performing their duties as members shall be entitled to receive compensation at a rate to be fixed by the Secretary of Defense, but not exceeding $100 per diem and shall also be entitled to receive an allowance for necessary travel expenses while so serving away from their place of residence.

(f) The Board, after considering the recommendations of the Dean, shall obtain the services of such military and civilian professors, instructors, and administrative and other employees as may be necessary to operate the University. Civilian members of the faculty and staff shall be employed under salary schedules and granted retirement and other related benefits prescribed by the Secretary of Defense so as to place the employees of the University on a comparable basis with the employees of fully accredited schools of the health professions within the vicinity of the District of Columbia. The

Board may confer academic titles, as appropriate, upon military and civilian members of the faculty. The military members of the faculty shall include a professor of military, naval, or air science as the Board may determine.

(g) The Board is authorized to negotiate agreements with agencies of the Federal Government to utilize on a reimbursable basis appropriate existing Federal medical resources located in or near the District of Columbia. Under such agreements the facilities concerned will retain their identities and basic missions. The Board is also authorized to negotiate affiliation agreements with an accredited university or universities in or near the District of Columbia. Such agreements may include provisions for payments for educational services provided students participating in Department of Defense educational programs. The Board may also, subject to the approval of the Secretary of Defense, enter into an agreement under which the University would become part of a national university of health sciences should such an institution be established in the vicinity of the District of Columbia.

(h) The Board may establish postdoctoral, postgraduate, and technological institutes.

(i) The Board shall also establish programs in continuing medical education for military members of the health professions to the end that high standards of health care may be maintained within the military medical services.

2114. Students: selection: status: obligation.

(a) students at the University shall be selected under procedures prescribed by the Secretary of Defense. In so prescribing, the Secretary shall consider the recommendations of the Board. However, selection procedures prescribed by the Secretary of Defense shall emphasize the basic requirement that students demonstrate sincere motivation and dedication to a career in the uniformed services (as defined in section 1072(1) of this title).

(b) Students shall be commissioned officers of a uniformed service as determined under regulations prescribed by the Secretary of Defense after consulting with the Secretary of Health, Education, and Welfare. Notwithstanding any other provision of law, they shall serve on active duty in pay grade O-1 with full pay and allowances of that grade, but shall not be counted against any prescribed military strengths. Upon graduation they shall be appointed in a regular component, if qualified, unless they are covered by section 2115 of this title. Students who graduate shall be required, except as provided in section 2115 of this title, to serve thereafter on active duty under such regulations as the Secretary of Defense or the Secretary of Health, Education, and Welfare, as appropriate, may prescribe for not less than seven years, unless sooner released. The service credit exclusions specified in section 2126 of this title shall apply to students covered by this section.

(c) A period of time spent in military intern or residency training shall not be creditable in satisfying active duty obligation imposed by this section.

(d) A member of the program who, under regulations prescribed by the Secretary of Defense, is dropped from the program for deficiency in conduct or studies, or for other reasons, may be required to perform active duty in an appropriate military capacity in accordance with the active duty obligation imposed by this section. In no case shall any such member be required to serve on active

duty for any period in excess of a period equal to the period he participated in the program, except that in no case may any such member be required to serve on active duty less than one year.

2115. Graduates: limitation on number permitted to perform civilian Federal service

The Secretary of Defense may allow not more than 20 percent of the graduates of each class at the University to perform civilian Federal service for not less than seven years following the completion of their professional education in lieu of active duty in a uniformed service if the needs of the uniformed services do not require that such graduates perform active duty in a uniformed service and as long as the Secretary of Defense does not recall such persons to active duty in the uniformed services. Such persons who execute an agreement in writing to perform such civilian Federal service may be released from active duty following the completion of their professional education. The location and type of their duty shall be determined by the Secretary of Defense after consultation with the heads of Federal agencies concerned.

2116. Reports to Congress

The Secretary of Defense shall report periodically to the Committees on Armed Services of the Senate and House of Representatives on the feasibility of establishing education institutions similar or identical to the University at any other locations he deems appropriate. The last such report shall be submitted by June 30, 1976.

2117. Authorization for appropriations

There is hereby authorized to be appropriated to the Department of Defense for the planning, construction, development, improvement, operation, and maintenance of the University, and to otherwise accomplish the purposes of this title, for the fiscal year beginning July 1, 1972, the sum of $15,000,000 and for each fiscal year thereafter such sum as may be authorized in the annual military construction authorization Act for such year.

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2128. Members of the program: service credit

Service performed while a member of the program shall not be counted—

(1) in determining eligibility for retirement other than by reason of a physical disability incurred while on active duty as a member of the program; or

(2) in computing years of service creditable under section 205, other than subsection (a)(7) and (8), of title 37.

* * * * * * * * * * * * * * *

Added Pub. L. 92-426, 2(a), Sept. 21, 1972, 86 Stat. 713 et seq.; Pub. L. 95-589, Nov. 4, 1978, 92 Stat. 2512; Pub. L. 96-107, Nov. 9, 1979, 93 Stat. 811 et seq. (Title 10, United States Code, 2112-2117, 2128)

-CITE-
10 USC CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES 01/06/03

-EXPCITE-
TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
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-HEAD-
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-MISC1-
Sec.
2112. Establishment.
2112a. Continued operation of University.
2113. Administration of University.
2114. Students: selection; status; obligation.
2115. Graduates: limitation on number permitted to perform civilian Federal service.
2116. Military nursing research.
(2117. Repealed.)

AMENDMENTS

1996 - Pub. L. 104-201, div. A, title IX, Sec. 907(a)(2), Sept. 23, 1996, 110 Stat. 2620, added item 2112a.

Pub. L. 104-106, div. A, title VII, Sec. 741(b), title X, Sec. 1072(c)(2), Feb. 10, 1996, 110 Stat. 385, 446, substituted ''Administration of University'' for ''Board of Regents'' in item 2113 and added item 2116.

1990 - Pub. L. 101-510, div. A, title XIV, Sec. 1484(b)(2)(B), Nov. 5, 1990, 104 Stat. 1716, struck out item 2117 ''Authorization for appropriations''.

1983 - Pub. L. 98-94, title XII, Sec. 1268(12)(B), Sept. 24, 1983, 97 Stat. 706, struck out item 2116 ''Reports to Congress''.

1979 - Pub. L. 96-107, title VIII, Sec. 803(c)(3), Nov. 9, 1979, 93 Stat. 812, substituted ''permitted'' for ''electing'' and ''service'' for ''duty'' in item 2115.

-CITE-
10 USC Sec. 2112 01/06/03

-EXPCITE-
TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-
Sec. 2112. Establishment

-STATUTE-
(a) There is hereby authorized to be established within 25 miles of the District of Columbia a Uniformed Services University of the Health Sciences (hereinafter in this chapter referred to as the ''University''), at a site or sites to be selected by the Secretary

of Defense, with authority to grant appropriate advanced degrees. It shall be so organized as to graduate not less than 100 medical students annually.

(b) Except as provided in subsection (a), the numbers of persons to be graduated from the University shall be prescribed by the Secretary of Defense. In so prescribing the number of persons to be graduated from the University, the Secretary of Defense shall institute actions necessary to ensure the maximum number of first-year enrollments in the University consistent with the academic capacity of the University and the needs of the uniformed services for medical personnel.

(c) The development of the University may be by such phases as the Secretary of Defense may prescribe subject to the requirements of subsection (a).

-SOURCE-

(Added Pub. L. 92-426, Sec. 2(a), Sept. 21, 1972, 86 Stat. 713; amended Pub. L. 96-107, title VIII, Sec. 803(a), Nov. 9, 1979, 93 Stat. 811; Pub. L. 96-513, title V, Sec. 511(63), (64), Dec. 12, 1980, 94 Stat. 2925, 2926; Pub. L. 104-106, div. A, title X, Sec. 1072(b)(1), Feb. 10, 1996, 110 Stat. 446; Pub. L. 107-107, div. A, title X, Sec. 1048(e)(8), Dec. 28, 2001, 115 Stat. 1228.)

-MISC1-

AMENDMENTS

2001 - Subsec. (a). Pub. L. 107-107 struck out '', with the first class graduating not later than September 21, 1982'' before period at end.

1996 - Subsec. (b). Pub. L. 104-106 struck out '', upon recommendation of the Board of Regents,'' before ''institute actions necessary''.

1980 - Subsec. (a). Pub. L. 96-513 inserted ''in this chapter'' after ''hereinafter'', and substituted ''September 21, 1982'' for ''10 years after the date of the enactment of this chapter''.

1979 - Subsec. (b). Pub. L. 96-107 inserted provisions respecting the maximum number of first-year enrollments in the University.

EFFECTIVE DATE OF 1980 AMENDMENT

Amendment by Pub. L. 96-513 effective Dec. 12, 1980, see section 701(b)(3) of Pub. L. 96-513, set out as a note under section 101 of this title.

SHORT TITLE

Section 1 of Pub. L. 92-426 provided: ''That this Act (enacting this chapter and chapter 105 of this title) may be cited as the 'Uniformed Services Health Professions Revitalization Act of 1972'.''

-TRANS-

TRANSFER OF FUNCTIONS

For transfer of authority of Board of Regents of Uniformed Services University of the Health Sciences to Secretary of Defense, see section 8091 of Pub. L. 101-511, set out as a note under section 2113 of this title.

-MISC5-

CONTINUATION OF UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

Section 1071 of Pub. L. 104-106, as amended by Pub. L. 104-201,

div. A, title IX, Sec. 907(b)(2), Sept. 23, 1996, 110 Stat. 2620, provided that:

''(a) Policy. - Congress reaffirms -

''(1) the prohibition set forth in subsection (a) of section 922 of the National Defense Authorization Act for Fiscal Year 1995 (Public Law 103-337; 108 Stat. 2829; 10 U.S.C. 2112 note) regarding closure of the Uniformed Services University of the Health Sciences; and

''(2) the expression of the sense of Congress set forth in subsection (b) of such section regarding the budgetary commitment to continuation of the University.

''((b) Repealed. Pub. L. 104-201, div. A, title IX, Sec. 907(b)(2), Sept. 23, 1996, 110 Stat. 2620. See section 2112a(b) of this title.)

''(c) Budgetary Commitment to Continuation. - It is the sense of Congress that the Secretary of Defense should budget for the operation of the Uniformed Services University of the Health Sciences during fiscal year 1997 at a level at least equal to the level of operations conducted at the University during fiscal year 1995.''

Pub. L. 103-337, div. A, title IX, Sec. 922, Oct. 5, 1994, 108 Stat. 2829, as amended by Pub. L. 104-201, div. A, title IX, Sec. 907(b)(1), Sept. 23, 1996, 110 Stat. 2620, provided that:

((a) Repealed. Pub. L. 104-201, div. A, title IX, Sec. 907(b)(1), Sept. 23, 1996, 110 Stat. 2620. See section 2112a(a) of this title.)

''(b) Budgetary Commitment to Continuation. - It is the sense of Congress that the Secretary of Defense should budget for the ongoing operation of the Uniformed Services University of the Health Sciences as an institution of professional education that is vital to the education and training each year of significant numbers of personnel of the uniformed services for careers as uniformed services health care providers.

''(c) GAO Evaluation. - Not later than June 1, 1995, the Comptroller General of the United States shall submit to Congress a detailed report on the Uniformed Services University of the Health Sciences. The report shall include the following:

''(1) A comparison of the cost of obtaining physicians for the Armed Forces from the University with the cost of obtaining physicians from other sources.

''(2) An assessment of the retention rate needs of the Armed Forces for physicians in relation to the respective retention rates of physicians obtained from the University and physicians obtained from other sources and the factors that contribute to retention rates among military physicians obtained from all sources.

''(3) A review of the quality of the medical education provided at the University with the quality of medical education provided by other sources of military physicians.

''(4) A review of the overall issue of the special needs of military medicine and how those special needs are being met by physicians obtained from University and physicians obtained from other sources.

''(5) An assessment of the extent to which the University has responded to the 1990 report of the Inspector General of the Department of Defense, including recommendations as to resolution of any continuing issues relating to management and internal

fiscal controls of the University, including issues relating to the Henry M. Jackson Foundation for the Advancement of Military Medicine identified in the 1990 report.

''(6) Such other recommendations as the Comptroller General considers appropriate.''

F. EDWARD HEAE1BERT SCHOOL OF MEDICINE

Pub. L. 98-94, title XII, Sec. 1265, Sept. 24, 1983, 97 Stat. 704, provided that: ''The School of Medicine of the Uniformed Services University of the Health Sciences shall after the date of the enactment of this Act (Sept. 24, 1983) be known and designated as the 'F. Edward HeAE1bert School of Medicine'. Any reference to such school of medicine in any law, regulation, map, document, or other record of the United States shall after such date be deemed to be a reference to such school of medicine as the F. Edward HeAE1bert School of Medicine.''

-SECREF-

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in section 2173 of this title.

-CITE-

10 USC Sec. 2112a 01/06/03

-EXPCITE-

TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-

Sec. 2112a. Continued operation of University

-STATUTE-

(a) Closure Prohibited. - The University may not be closed.

(b) Personnel Strength. - During the five-year period beginning on October 1, 1996, the personnel staffing levels for the University may not be reduced below the personnel staffing levels for the University as of October 1, 1993.

-SOURCE-

(Added Pub. L. 104-201, div. A, title IX, Sec. 907(a)(1), Sept. 23, 1996, 110 Stat. 2620.)

-MISC1-

PRIOR PROVISIONS

Provisions similar to those in subsec. (a) of this section were contained in Pub. L. 103-337, div. A, title IX, Sec. 922(a), Oct. 5, 1994, 108 Stat. 2829, which was set out as a note under section 2112 of this title prior to repeal by Pub. L. 104-201, Sec. 907(b)(1).

Provisions similar to those in subsec. (b) of this section were contained in Pub. L. 104-106, div. A, title X, Sec. 1071(b), Feb. 10, 1996, 110 Stat. 445, which was set out as a note under section 2112 of this title prior to repeal by Pub. L. 104-201, Sec. 907(b)(2).

-CITE-

-EXPCITE-
TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-
Sec. 2113. Administration of University

-STATUTE-
(a) The business of the University shall be conducted by the Secretary of Defense with funds appropriated for and provided by the Department of Defense. To assist the Secretary in an advisory capacity, there is a Board of Regents for the University. The Board shall consist of -

(1) nine persons outstanding in the fields of health and health education who shall be appointed from civilian life by the President, by and with the advice and consent of the Senate;

(2) the Secretary of Defense, or his designee, who shall be an ex officio member;

(3) the surgeons general of the uniformed services, who shall be ex officio members; and

(4) the person referred to in subsection (d).

(b) The term of office of each member of the Board (other than ex officio members) shall be six years except that -

(1) any member appointed to fill a vacancy occurring before the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term;

(2) the terms of office of the members first taking office shall expire, as designated by the President at the time of the appointment, three at the end of two years, three at the end of four years, and three at the end of six years; and

(3) any member whose term of office has expired shall continue to serve until his successor is appointed.

(c) One of the members of the Board (other than an ex officio member) shall be designated by the President as Chairman. He shall be the presiding officer of the Board.

(d) The Secretary shall appoint a Dean of the University (hereinafter in this chapter referred to as the ''Dean'') who shall also serve as a nonvoting ex officio member of the Board.

(e) Members of the Board (other than ex officio members) while attending conferences or meetings or while otherwise performing their duties as members shall be entitled to receive compensation at a rate to be fixed by the Secretary, but not exceeding $100 per diem and shall also be entitled to receive an allowance for necessary travel expenses while so serving away from their place of residence.

(f)(1) The Secretary, after considering the recommendations of the Dean, shall obtain the services of such military and civilian professors, instructors, and administrative and other employees as may be necessary to operate the University. Civilian members of the faculty and staff shall be employed under salary schedules and granted retirement and other related benefits prescribed by the Secretary so as to place the employees of the University on a comparable basis with the employees of fully accredited schools of

the health professions within the vicinity of the District of Columbia.

(2) The Secretary may confer academic titles, as appropriate, upon military and civilian members of the faculty.

(3) The military members of the faculty shall include a professor of military, naval, or air science as the Secretary may determine.

(4) The limitations in section 5373 of title 5 do not apply to the authority of the Secretary under paragraph (1) to prescribe salary schedules and other related benefits.

(g) The Secretary may negotiate agreements with agencies of the Federal Government to utilize on a reimbursable basis appropriate existing Federal medical resources located in or near the District of Columbia. Under such agreements the facilities concerned will retain their identities and basic missions. The Secretary may negotiate affiliation agreements with an accredited university or universities in or near the District of Columbia. Such agreements may include provisions for payments for educational services provided students participating in Department of Defense educational programs. The Secretary may enter into an agreement under which the University would become part of a national university of health sciences should such an institution be established in the vicinity of the District of Columbia.

(h) The Secretary of Defense may establish the following educational programs at the University:

(1) Postdoctoral, postgraduate, and technological institutes.

(2) A graduate school of nursing.

(3) Other schools or programs that the Secretary determines necessary in order to operate the University in a cost-effective manner.

(i) The Secretary shall also establish programs in continuing medical education for military members of the health professions to the end that high standards of health care may be maintained within the military medical services.

(j)(1) The Secretary also is authorized -

(A) to enter into contracts with, accept grants from, and make grants to the Henry M. Jackson Foundation for the Advancement of Military Medicine established under section 178 of this title, or any other nonprofit entity, for the purpose of carrying out cooperative enterprises in medical research, medical consultation, and medical education;

(B) to make available to the Henry M. Jackson Foundation for the Advancement of Military Medicine, on such terms and conditions as the Secretary determines appropriate, such space, facilities, equipment, and support services within the University as the Secretary considers necessary to accomplish cooperative enterprises undertaken by such Foundation and the University;

(C) to enter into contracts with the Henry M. Jackson Foundation for the Advancement of Military Medicine under which the Secretary may furnish the services of such professional, technical, or clerical personnel as may be necessary to fulfill cooperative enterprises undertaken by such foundation and the University;

(D) to accept, hold, administer, invest, and spend any gift, devise, or bequest of personal property made to the University, including any gift, devise, or bequest for the support of an academic chair, teaching, research, or demonstration project;

(E) to enter into agreements with the Henry M. Jackson

Foundation for the Advancement of Military Medicine, or with any other nonprofit entity, under which scientists or other personnel of the Foundation or other entity may be utilized by the University for the purpose of enhancing the activities of the University in education, research, and technological applications of knowledge; and

(F) to accept the voluntary services of guest scholars and other persons.

(2) The Secretary may not enter into any contract with the Henry M. Jackson Foundation for the Advancement of Military Medicine, or with any other entity, if the contract would obligate the University to make outlays in advance of the enactment of budget authority for such outlays.

(3) Scientists or other medical personnel utilized by the University under an agreement described in clause (E) of paragraph (1) may be appointed to any position within the University and may be permitted to perform such duties within the University as the Secretary may approve.

(4) A person who provides voluntary services under the authority of clause (F) of paragraph (1) shall be considered to be an employee of the Federal Government for the purposes of chapter 81 of title 5, relating to compensation for work-related injuries, and to be an employee of the Federal Government for the purposes of chapter 171 of title 28, relating to tort claims. Such a person who is not otherwise employed by the Federal Government shall not be considered to be a Federal employee for any other purpose by reason of the provision of such services.

-SOURCE-

(Added Pub. L. 92-426, Sec. 2(a), Sept. 21, 1972, 86 Stat. 714; amended Pub. L. 95-589, Nov. 4, 1978, 92 Stat. 2512; Pub. L. 96-513, title V, Sec. 511(64), Dec. 12, 1980, 94 Stat. 2926; Pub. L. 98-36, Sec. 3, May 27, 1983, 97 Stat. 201; Pub. L. 98-132, Sec. 2(b), Oct. 17, 1983, 97 Stat. 849; Pub. L. 99-661, div. A, title V, Sec. 505, Nov. 14, 1986, 100 Stat. 3864; Pub. L. 101-189, div. A, title VII, Sec. 726(a), (b)(1), Nov. 29, 1989, 103 Stat. 1480; Pub. L. 101-510, div. A, title XIII, Sec. 1322(a)(3), Nov. 5, 1990, 104 Stat. 1671; Pub. L. 104-106, div. A, title X, Sec. 1072(a), (b)(2), (c)(1), Feb. 10, 1996, 110 Stat. 446; Pub. L. 106-65, div. A, title XI, Sec. 1108, Oct. 5, 1999, 113 Stat. 778; Pub. L. 106-398, Sec. 1 ((div. A), title X, Sec. 1087(a)(12)), Oct. 30, 2000, 114 Stat. 1654, 1654A-291.)

-MISC1-

AMENDMENTS

2000 - Subsec. (f). Pub. L. 106-398 designated penultimate sentence and last sentence of par. (1) as pars. (2) and (3), respectively, redesignated former par. (3) as (4), and struck out former par. (2) which read as follows: ''The Secretary may exempt, at any time, a physician who is a member of the faculty from the restrictions in subsections (a), (b), and (c) of section 5532 of title 5, if the Secretary determines that such exemption is necessary to recruit or retain well-qualified physicians for the faculty of the University. An exemption granted under this paragraph shall terminate upon any break in employment with the University by a physician of three days or more. An exemption granted under this paragraph to a person shall apply to the retired

pay of such person beginning with the first month after the month in which the exemption is granted. Not more than five exemptions may be in effect under this paragraph at any time.''

1999 - Subsec. (f)(3). Pub. L. 106-65 added par. (3).

1996 - Pub. L. 104-106, Sec. 1072(c)(1), substituted ''Administration of University'' for ''Board of Regents'' as section catchline.

Subsec. (a). Pub. L. 104-106, Sec. 1072(b)(2)(A), substituted ''conducted by the Secretary of Defense'' for ''conducted by a Board of Regents (hereinafter in this chapter referred to as the 'Board')'' and inserted after first sentence ''To assist the Secretary in an advisory capacity, there is a Board of Regents for the University.''

Subsec. (d). Pub. L. 104-106, Sec. 1072(b)(2)(B), substituted ''The Secretary shall appoint'' for ''The Board shall appoint''.

Subsec. (e). Pub. L. 104-106, Sec. 1072(b)(2)(C), struck out ''of Defense'' after ''Secretary''.

Subsec. (f). Pub. L. 104-106, Sec. 1072(b)(2)(D), (F), in par. (1), substituted ''Secretary, after'' for ''Board, after'', ''Secretary so'' for ''Secretary of Defense so'', and ''Secretary may'' for ''Board may'' in two places, and in par. (2), substituted ''Secretary'' for ''Board'' in two places.

Subsec. (g). Pub. L. 104-106, Sec. 1072(b)(2)(E), substituted ''Secretary may negotiate agreements'' for ''Board is authorized to negotiate agreements'', ''Secretary may negotiate affiliation'' for ''Board is also authorized to negotiate affiliation'', and ''Secretary may enter'' for ''Board may also, subject to the approval of the Secretary of Defense, enter''.

Subsec. (h). Pub. L. 104-106, Sec. 1072(a), amended subsec. (h) generally. Prior to amendment, subsec. (h) read as follows: ''The Board may establish postdoctoral, postgraduate, and technological institutes.''

Subsecs. (i), (j). Pub. L. 104-106, Sec. 1072(b)(2)(F), substituted ''Secretary'' for ''Board'' wherever appearing.

1990 - Subsec. (j)(1). Pub. L. 101-510, Sec. 1322(a)(3)(A), struck out ''subject to paragraph (2),'' before ''to make'' in subpar. (B) and before ''to enter'' in subpars. (C) and (E).

Subsec. (j)(2) to (5). Pub. L. 101-510, Sec. 1322(a)(3)(B), (C), redesignated pars. (3) to (5) as (2) to (4), respectively, and struck out former par. (2) which read as follows: ''The authority of the Board under clauses (B), (C), and (E) of paragraph (1) may be exercised only if -

''(A) before the Board enters into any arrangement under which any space, facility, equipment, or support service is made available under clause (B) of such paragraph, before the Board enters into any contract under clause (C) of such paragraph, or before the Board enters into any agreement under clause (E) of such paragraph, it notifies the Committees on Armed Services of the Senate and the House of Representatives in writing of the proposed arrangement, contract, or agreement, as the case may be, the terms and conditions thereof, and, in the case of a proposed agreement under clause (E) of paragraph (1), any appointments proposed to be made under the authority of paragraph (4) in connection with the agreement, and

''(B) a period of fifteen days has elapsed following the date on which the notice is received by such committees.''

1989 - Subsec. (f)(2). Pub. L. 101-189, Sec. 726(a), substituted

''five exemptions'' for ''two exemptions''.

Subsec. (j)(1)(A). Pub. L. 101-189, Sec. 726(b)(1), inserted '', accept grants from, and make grants to'' after ''contracts with'' and substituted ''or any other'' for ''or with any other''.

1986 - Subsec. (f). Pub. L. 99-661 designated existing provisions as par. (1) and added par. (2).

1983 - Subsec. (j). Pub. L. 98-132 inserted ''Henry M. Jackson'' before ''Foundation for the Advancement of Military Medicine'' wherever appearing.

Pub. L. 98-36 added subsec. (j).

1980 - Subsecs. (a) and (d). Pub. L. 96-513 inserted ''in this chapter'' after ''hereinafter''.

1978 - Subsec. (b)(3). Pub. L. 95-589 added par. (3).

EFFECTIVE DATE OF 1980 AMENDMENT

Amendment by Pub. L. 96-513 effective Dec. 12, 1980, see section 701(b)(3) of Pub. L. 96-513, set out as a note under section 101 of this title.

-TRANS-

TRANSFER OF FUNCTIONS

Section 8091 of Pub. L. 101-511 provided that: ''Notwithstanding any other provision of law, all authority of the Board of Regents of the Uniformed Services University of the Health Sciences is hereby transferred to the Secretary of Defense, and the Board hereafter shall be an advisory board to the Secretary of Defense.''

-SECREF-

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in section 2114 of this title.

-CITE-

10 USC Sec. 2114 01/06/03

-EXPCITE-

TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-

Sec. 2114. Students: selection; status; obligation

-STATUTE-

(a) Medical students at the University shall be selected under procedures prescribed by the Secretary of Defense. In so prescribing, the Secretary shall consider the recommendations of the Board. However, selection procedures prescribed by the Secretary of Defense shall emphasize the basic requirement that students demonstrate sincere motivation and dedication to a career in the uniformed services (as defined in section 1072(1) of this title).

(b) Medical students shall be commissioned officers of a uniformed service as determined under regulations prescribed by the Secretary of Defense after consulting with the Secretary of Health and Human Services. Notwithstanding any other provision of law, they shall serve on active duty in pay grade O-1 with full pay and allowances of that grade. Upon graduation they shall be appointed

in a regular component, if qualified, unless they are covered by section 2115 of this title. Medical students who graduate shall be required, except as provided in section 2115 of this title, to serve thereafter on active duty under such regulations as the Secretary of Defense or the Secretary of Health and Human Services, as appropriate, may prescribe for not less than seven years, unless sooner released. Upon completion of, or release from, the active-duty service obligation, a member of the program who served on active-duty for less than 10 years shall serve in the Ready Reserve for the period specified in the following table:

Period of Service on Active Duty	Ready Reserve Obligation
Less than 8 years	6 years
8 years or more, but less than 9	4 years
9 years or more, but less than 10	2 years

The service credit exclusions specified in section 2126 of this title shall apply to students covered by this section.

(c) A period of time spent in military intern or residency training shall not be creditable in satisfying a commissioned service obligation imposed by this section.

(d) A medical student who, under regulations prescribed by the Secretary of Defense, is dropped from the program for deficiency in conduct or studies, or for other reasons, may be required to perform active duty in an appropriate military capacity in accordance with the active duty obligation imposed by this section. In no case shall any such student be required to serve on active duty for any period in excess of a period equal to the period he participated in the program, except that in no case may any such student be required to serve on active duty less than one year.

(e)(1) The Secretary of Defense may enter into agreements with foreign military medical schools for reciprocal education programs under which students at the University receive specialized military medical instruction at the foreign military medical school and military medical personnel of the country of such medical school receive specialized military medical instruction at the University. Any such agreement may be made on a reimbursable basis or a nonreimbursable basis.

(2) Not more than 40 persons at any one time may receive instruction at the University under this subsection. Attendance of such persons at the University may not result in a decrease in the number of students enrolled in the University. Subsection (b) does not apply to students receiving instruction under this subsection.

(3) The Dean of the University, with the approval of the Secretary of Defense, shall determine the countries from which persons may be selected to receive instruction under this subsection and the number of persons that may be selected from each country. The Dean may establish qualifications and methods of selection and shall select those persons who will be permitted to receive instruction at the University. The qualifications established shall be comparable to those required of United States citizens.

(4) Each foreign country from which a student is permitted to receive instruction at the University under this subsection shall reimburse the United States for the cost of providing such instruction, unless such reimbursement is waived by the Secretary of Defense. The Secretary of Defense shall prescribe the rates for

reimbursement under this paragraph.

(5) Except as the Dean determines, a person receiving instruction at the University under this subsection is subject to the same regulations governing attendance, discipline, discharge, and dismissal as a student enrolled in the University. The Secretary may prescribe regulations with respect to access to classified information by a person receiving instruction under this subsection that differ from the regulations that apply to a student enrolled in the University.

(f) In this section, the term ''commissioned service obligation'' means, with respect to an officer who is a graduate of the University, the period beginning on the date of the appointment of the officer in a regular component after graduation and ending on the tenth anniversary of that appointment.

(g) The Secretary of Defense shall establish such selection procedures, service obligations, and other requirements as the Secretary considers appropriate for graduate students (other than medical students) in a postdoctoral, postgraduate, or technological institute established pursuant to section 2113(h) of this title.

(h) A graduate of the University who is relieved of the graduate's active-duty service obligation under subsection (b) before the completion of that active-duty service obligation may be given, with or without the consent of the graduate, an alternative obligation in the same manner as provided in subparagraphs (A) and (B) of paragraph (1) of section 2123(e) of this title or paragraph (2) of such section for members of the Armed Forces Health Professions Scholarship and Financial Assistance program.

-SOURCE-

(Added Pub. L. 92-426, Sec. 2(a), Sept. 21, 1972, 86 Stat. 715; amended Pub. L. 96-107, title VIII, Sec. 803(b), Nov. 9, 1979, 93 Stat. 812; Pub. L. 96-513, title I, Sec. 114, title V, Sec. 511(65), Dec. 12, 1980, 94 Stat. 2877, 2926; Pub. L. 98-525, title XV, Sec. 1535, Oct. 19, 1984, 98 Stat. 2633; Pub. L. 101-189, div. A, title V, Sec. 511(a), Nov. 29, 1989, 103 Stat. 1439; Pub. L. 101-510, div. A, title V, Sec. 533(a), (b), Nov. 5, 1990, 104 Stat. 1564; Pub. L. 103-160, div. A, title VII, Sec. 732(a), Nov. 30, 1993, 107 Stat. 1696; Pub. L. 104-106, div. A, title X, Sec. 1072(b)(3), Feb. 10, 1996, 110 Stat. 446; Pub. L. 104-201, div. A, title VII, Sec. 741(b), Sept. 23, 1996, 110 Stat. 2599; Pub. L. 105-85, div. A, title X, Sec. 1073(a)(38), Nov. 18, 1997, 111 Stat. 1902.)

-MISC1-

AMENDMENTS

1997 - Subsec. (h). Pub. L. 105-85 substituted ''section 2123(e)'' for ''section 2123(e)(1)''.

1996 - Subsec. (e)(1). Pub. L. 104-106 substituted ''The Secretary of Defense'' for ''The Board, upon approval of the Secretary of Defense,''.

Subsec. (h). Pub. L. 104-201 added subsec. (h).

1993 - Subsec. (a). Pub. L. 103-160, Sec. 732(a)(1), substituted ''Medical students'' for ''Students'' in first sentence.

Subsec. (b). Pub. L. 103-160, Sec. 732(a)(2), substituted ''Medical students'' for ''Students'' in two places.

Subsec. (d). Pub. L. 103-160, Sec. 732(a)(3), substituted ''medical student'' for ''member of the program'' in first sentence

and ''any such student'' for ''any such member'' in two places in second sentence.

Subsec. (g). Pub. L. 103-160, Sec. 732(a)(4), added subsec. (g).

1990 - Subsec. (b). Pub. L. 101-510, Sec. 533(b)(1), after fourth sentence inserted provisions relating to the time obligation to be served in the Ready Reserve upon completion of, or release from, the active-duty service obligation for members of the program who served on active duty for less than 10 years.

Pub. L. 101-510, Sec. 533(a), substituted ''seven years'' for ''10 years'' in fourth sentence.

Subsec. (c). Pub. L. 101-510, Sec. 533(b)(2), substituted ''a commissioned service obligation'' for ''an active duty obligation''.

Subsec. (f). Pub. L. 101-510, Sec. 533(b)(3), added subsec. (f).

1989 - Subsec. (b). Pub. L. 101-189 substituted ''10 years'' for ''seven years'' in fourth sentence.

1984 - Subsec. (e). Pub. L. 98-525 added subsec. (e).

1980 - Subsec. (b). Pub. L. 96-513, Sec. 511(65), substituted ''Secretary of Health and Human Services'' for ''Secretary of Health, Education, and Welfare'' wherever appearing.

Pub. L. 96-513, Sec. 114, struck out provision under which officers attending the Uniformed Services University of Health Sciences were not counted against authorized military strengths.

1979 - Subsec. (b). Pub. L. 96-107 substituted ''uniformed'' for ''uniform''.

EFFECTIVE DATE OF 1996 AMENDMENT

Section 741(c) of Pub. L. 104-201 provided that: ''The amendments made by this section (amending this section and section 2123 of this title) shall apply with respect to individuals who first become members of the Armed Forces Health Professions Scholarship and Financial Assistance program or students of the Uniformed Services University of the Health Sciences on or after October 1, 1996.''

EFFECTIVE DATE OF 1993 AMENDMENT

Section 732(b) of Pub. L. 103-160 provided that: ''The amendments made by subsection (a) (amending this section) shall apply with respect to students attending the Uniformed Services University of the Health Sciences on or after the date of the enactment of this Act (Nov. 30, 1993).''

EFFECTIVE DATE OF 1990 AMENDMENT

Section 533(d) of Pub. L. 101-510 provided that: ''The amendment made by subsection (b) (amending this section) shall take effect on December 31, 1991, and shall apply to persons who are first admitted to the Uniformed Services University of the Health Sciences after that date.''

EFFECTIVE DATE OF 1989 AMENDMENT

Section 511(e) of Pub. L. 101-189, as amended by Pub. L. 101-510, div. A, title V, Sec. 533(c), Nov. 5, 1990, 104 Stat. 1564, provided that: ''The amendments made by this section (amending this section and sections 4348, 6959, and 9348 of this title) shall apply to persons who are first admitted to one of the military service academies after December 31, 1991.''

EFFECTIVE DATE OF 1980 AMENDMENT

Amendment by section 114 of Pub. L. 96-513 effective Sept. 15, 1981, but the authority to prescribe regulations under the amendment by Pub. L. 96-513 effective on Dec. 12, 1980, see section 701 of Pub. L. 96-513, set out as a note under section 101 of this

title.

Amendment by section 511(65) of Pub. L. 96-513 effective Dec. 12, 1980, see section 701(b)(3) of Pub. L. 96-513.

-TRANS-

TRANSFER OF FUNCTIONS

For transfer of authority of Board of Regents of Uniformed Services University of the Health Sciences to Secretary of Defense, see section 8091 of Pub. L. 101-511, set out as a note under section 2113 of this title.

-MISC5-

TRANSITION PROVISIONS

Section 741(d)(2) of Pub. L. 104-201 provided that: ''In the case of any person who, as of October 1, 1996, is serving an active-duty service obligation as a graduate of the Uniformed Services University of the Health Sciences or is incurring an active-duty service obligation as a student of the University, and who is subsequently relieved of the active-duty service obligation before the completion of the obligation, the alternative obligations authorized by the amendment made by subsection (b) (amending this section) may be implemented by the Secretary of Defense with the agreement of the person.''

-CITE-

10 USC Sec. 2115 01/06/03

-EXPCITE-

TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-

Sec. 2115. Graduates: limitation on number permitted to perform civilian Federal service

-STATUTE-

The Secretary of Defense may allow not more than 20 percent of the graduates of each class at the University to perform civilian Federal service for not less than seven years following the completion of their professional education in lieu of active duty in a uniformed service if the needs of the uniformed services do not require that such graduates perform active duty in a uniformed service and as long as the Secretary of Defense does not recall such persons to active duty in the uniformed services. Such persons who execute an agreement in writing to perform such civilian Federal service may be released from active duty following the completion of their professional education. The location and type of their duty shall be determined by the Secretary of Defense after consultation with the heads of Federal agencies concerned.

-SOURCE-

(Added Pub. L. 92-426, Sec. 2(a), Sept. 21, 1972, 86 Stat. 716; amended Pub. L. 96-107, title VIII, Sec. 803(c)(1), (2), Nov. 9, 1979, 93 Stat. 812.)

-MISC1-

AMENDMENTS

1979 - Pub. L. 96-107, Sec. 803(c)(2), substituted ''permitted'' for ''electing'' and ''service'' for ''duty'' in section catchline.

Pub. L. 96-107, Sec. 803(c)(1), substituted provisions respecting authority of the Secretary of Defense to allow graduates to perform civilian Federal service and the execution of agreements for such service as prerequisites for release from active duty following completion of education, for provisions relating to limitations on the number of graduates electing to perform civilian Federal duty, agreements respecting such service, and release from active duty upon completion of their education.

-SECREF-

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in section 2114 of this title.

-CITE-

10 USC Sec. 2116 01/06/03

-EXPCITE-

TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-

Sec. 2116. Military nursing research

-STATUTE-

(a) Definitions. - In this section:

(1) The term ''military nursing research'' means research on the furnishing of care and services by nurses in the armed forces.

(2) The term ''TriService Nursing Research Program'' means the program of military nursing research authorized under this section.

(b) Program Authorized. - The Secretary of Defense may establish at the University a program of military nursing research.

(c) TriService Research Group. - The TriService Nursing Research Program shall be administered by a TriService Nursing Research Group composed of Army, Navy, and Air Force nurses who are involved in military nursing research and are designated by the Secretary concerned to serve as members of the group.

(d) Duties of Group. - The TriService Nursing Research Group shall -

(1) develop for the Department of Defense recommended guidelines for requesting, reviewing, and funding proposed military nursing research projects; and

(2) make available to Army, Navy, and Air Force nurses and Department of Defense officials concerned with military nursing research -

(A) information about nursing research projects that are being developed or carried out in the Army, Navy, and Air Force; and

(B) expertise and information beneficial to the encouragement of meaningful nursing research.

(e) Research Topics. - For purposes of this section, military nursing research includes research on the following issues:

(1) Issues regarding how to improve the results of nursing care and services provided in the armed forces in time of peace.

(2) Issues regarding how to improve the results of nursing care and services provided in the armed forces in time of war.

(3) Issues regarding how to prevent complications associated with battle injuries.

(4) Issues regarding how to prevent complications associated with the transporting of patients in the military medical evacuation system.

(5) Issues regarding how to improve methods of training nursing personnel.

(6) Clinical nursing issues, including such issues as prevention and treatment of child abuse and spouse abuse.

(7) Women's health issues.

(8) Wellness issues.

(9) Preventive medicine issues.

(10) Home care management issues.

(11) Case management issues.

-SOURCE-

(Added Pub. L. 104-106, div. A, title VII, Sec. 741(a), Feb. 10, 1996, 110 Stat. 384.)

-MISC1-

PRIOR PROVISIONS

A prior section 2116, added Pub. L. 92-426, Sec. 2(a), Sept. 21, 1972, 86 Stat. 716, directed Secretary of Defense to report periodically to Committees on Armed Services of the Senate and House of Representatives on feasibility of establishing educational institutions similar or identical to University at any other locations he deemed appropriate, with last such report to be submitted by June 30, 1976, prior to repeal by Pub. L. 98-94, title XII, Sec. 1268(12)(A), Sept. 24, 1983, 97 Stat. 706.

-CITE-

10 USC Sec. 2117 01/06/03

-EXPCITE-

TITLE 10 - ARMED FORCES
Subtitle A - General Military Law
PART III - TRAINING AND EDUCATION
CHAPTER 104 - UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

-HEAD-

(Sec. 2117. Repealed. Pub. L. 101-510, div. A, title XIV, Sec. 1484(b)(2)(A), Nov. 5, 1990, 104 Stat. 1716)

-MISC1-

Section, added Pub. L. 92-426, Sec. 2(a), Sept. 21, 1972, 86 Stat. 716, authorized appropriations for the Uniformed Services University of the Health Sciences.

-CITE-

Department of Defense

DIRECTIVE

NUMBER 5105.45

March 9, 2000

DA&M

SUBJECT: Uniformed Services University of the Health Sciences (USUHS)

(a) DoD Directive 5105.45, subject as above, May 17, 1999 (hereby canceled)
(b) Chapter 104 et seq. of title 10, United States Code
(c) Secretary of Defense Report, "Defense Reform Initiative," November 1997[1]
(d) Program Budget Decision 711R, "Defense Reform Initiative - Office of the Secretary of Defense and the Defense Agencies," December 17, 1997
(e) through (g), see enclosure 1

1. REISSUANCE AND PURPOSE

This Directive reissues reference (a) to:

1.1. Update the mission, policy, organization and management, responsibilities and functions, relationships, and authorities of the USUHS.

1.2. Provide for USUHS governance under reference (b).

1.3. Establish the USUHS Executive Committee, pursuant to the direction of reference (c).

1.4. Designate the Secretary of the Navy as the "DoD Executive Agent" for administrative support of the USUHS, in accordance with reference (d).

1 Availabile at http://www.defenselink.mil/pubs/dodreform/

2. APPLICABILITY

This Directive applies to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chiefs of Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as "the DoD Components").

3. DEFINITIONS

3.1. Academic Affairs. Faculty appointments, promotions and organization, awarding of degrees, curriculum design and implementation, academic requirements for admission and graduation, and related matters vital to the academic well-being of the USUHS.

3.2. Uniformed Services. The Army, the Navy, the Air Force, the Marine Corps, the Coast Guard, the Commissioned Corps of the U.S. Public Health Service, and the Commissioned Corps of the National Oceanic and Atmospheric Administration.

4. MISSION

The USUHS shall:

4.1. Educate and train competent medical personnel qualified to serve the needs of the Uniformed Services through providing the highest quality education programs in the health sciences.

4.2. Place high priority on educating and training personnel to meet the combat and peacetime medical needs of the Armed Forces.

4.3. Grant applicable advanced academic degrees; establish postdoctoral and postgraduate programs, and technological institutes; conduct medical readiness training and continuing education for members of the Uniformed Services in the health professions; and prepare individuals for careers in the health professions in the Uniformed Services.

5. POLICY

It is DoD policy that:

5.1. Consistent with the performance of the DoD mission and with established practices covering academic independence and integrity in the fields of medical and health sciences education, the Department of Defense recognizes the unique role of the USUHS Board of Regents in advising the Secretary of Defense. Consistent with applicable law and accomplishment of the DoD mission, the Assistant Secretary of Defense for Health Affairs (ASD(HA)), the USUHS Executive Committee, and the President of the USUHS shall be guided by the advice of the USUHS Board of Regents on academic affairs.

5.2. USUHS funding shall be within the Defense Health Program.

6. ORGANIZATION AND MANAGEMENT

6.1. The USUHS is a joint entity of the three Military Departments, subject to the overall supervision of the ASD(HA) and the management direction of the USUHS Executive Committee, and shall consist of the following:

6.1.1. A Board of Regents that shall be established and operated, in accordance with 5 U.S.C. Appendix (Federal Advisory Committee Act) (reference (e)), and shall consist of members appointed under Section 2113(a), Chapter 104 of 10 U.S.C. (reference (b)).

6.1.2. A President of the USUHS, who shall be the chief executive officer of the USUHS, and who also is the Dean of the USUHS, as described in reference (b), and who shall report to the ASD(HA), through the USUHS Executive Committee.

6.1.3. A Dean of the F. Edward Hebert School of Medicine, who shall function as the chief academic officer of the F. Edward Hebert School of Medicine and report to the President of the USUHS.

6.1.4. A Dean of the Graduate School of Nursing, who shall function as the chief academic officer of the Graduate School of Nursing and report to the President of the USUHS.

6.1.5. Other subordinate positions and elements as are established by the President of the USUHS within authorized resources.

6.1.6. Students selected under procedures prescribed, in accordance with Chapter 104 of reference (b), and graduate students.

6.2. The USUHS Executive Committee is established to provide the supervision and management of the USUHS, pursuant to the Defense Reform Initiative (reference (c)), and consistent with the direction of the Secretary of Defense to reduce the operational and program management responsibilities of the OSD.

6.2.1. The USUHS Executive Committee shall consist of the Surgeons General of the three Military Departments and shall report to the ASD(HA) on USUHS matters.

6.2.2. A Chair shall be designated from among the membership, as mutually determined by the membership.

6.2.3. The President of the USUHS shall provide an Executive Secretary and associated staff support.

6.2.4. The DoD Executive Agent shall be represented on the USUHS Executive Committee by the Surgeon General of the Navy.

7. RESPONSIBILITIES AND FUNCTIONS

7.1. The Assistant Secretary of Defense for Health Affairs, under the Under Secretary of Defense for Personnel and Readiness, shall:

7.1.1. In accordance with DoD Directive 5136.1 (reference (f)), exercise authority, direction and control over the medical personnel, facilities, programs, funding, and associated resources in the Department of Defense as they relate to the USUHS.

7.1.2. Exercise the authorities over the USUHS vested in the Secretary of Defense by Chapter 104 of 10 U.S.C. (reference (b)), except that the authority to appoint the President of the USUHS is reserved to the Secretary of Defense.

7.1.3. Develop policies and issue policy guidelines to ensure the effective integration of USUHS programs and activities in the DoD Health Program. That includes, but is not limited to, the development of DoD Directives, the issuance of DoD Instructions, and OSD-level participation in the Planning, Programming, and Budgeting System process.

7.1.4. Ensure that the advice of the Board of Regents in matters of academic affairs is considered, in accordance with the policy in section 5.1., above.

7.1.5. Ensure that the Board of Regents shall participate in the governance of the USUHS by advising the Secretary of Defense, through the ASD(HA), on academic affairs and on the administration and management of the USUHS.

7.1.6. Ensure that the President of the USUHS shall:

7.1.6.1. Make certain that educational programs leading to a Doctor of Medicine or other advanced degrees in the health professions meet the standards of applicable and recognized, accrediting, licensing, and certifying Agencies.

7.1.6.2. Carry out those responsibilities and functions pertaining to the supervision and management of University programs, activities, personnel, and resources as the ASD(HA) and Executive Committee prescribe.

7.1.7. Ensure that the Dean of the F. Edward Hebert School of Medicine shall develop and administer policies and procedures on the academic affairs of the F. Edward Hebert School of Medicine.

7.1.8. Ensure that the Dean of the Graduate School of Nursing shall develop and administer policies and procedures on the academic affairs of the Graduate School of Nursing.

7.2. The Secretary of the Navy shall serve as the DoD Executive Agent for administrative support of the USUHS, to include budget, personnel, information, facilities, and other resource responsibilities required for the mission of the USUHS.

7.2.1. Civilian personnel authorizations shall be under the purview of the DoD Executive Agent and civilian employees shall be carried on the rolls of the Department of the Navy.

7.2.2. The USUHS funding and personnel requirements shall not be offset against the Navy Surgeon General budget or work-year allocations.

7.3. The Director, Defense Legal Services Agency, shall provide legal advice and services for the USUHS.

7.4. The USUHS Executive Committee, consistent with the policy guidance of the ASD(HA), shall:

7.4.1. Oversee the operation of the USUHS and provide management direction to the President of the USUHS on the day-to-day operation of the USUHS.

7.4.2. Provide guidance to the President of the USUHS and advice to the ASD(HA) on the annual USUHS program and budget submissions.

7.4.3. Provide advice to the ASD(HA) on health policy matters relating to the USUHS.

8. RELATIONSHIPS

8.1. In carrying out the responsibilities and functions of the chief executive officer of the USUHS, the President of the USUHS shall:

8.1.1. Obtain advice from the USUHS Executive Committee and the Board of Regents, as necessary, to assist the President of the USUHS in performing the President's duties.

8.1.2. Coordinate and exchange information and advice with elements of the OSD and the other DoD Components having collateral or related responsibilities.

8.1.3. Make use of established facilities and services in the Department of Defense and other Government Agencies, when practical, to avoid duplication and achieve maximum efficiency and economy.

8.1.4. Consult and coordinate with other Governmental Agencies and non-Governmental agencies on matters for the mission and programs of the USUHS.

8.2. The Heads of the DoD Components shall coordinate with the ASD(HA) on all matters relating to the mission and programs of the USUHS.

9. AUTHORITIES

The President of the USUHS is specifically delegated the authority to:

9.1. Obtain reports, information, advice, and assistance consistent with DoD Directive 8910.1 (reference (g)), as necessary, to carry out assigned responsibilities and functions.

9.2. Communicate directly with appropriate representatives of the DoD Components and other Executive Departments and Agencies, and members of the public, as appropriate, on matters related to the mission and programs of the USUHS.

9.3. Appoint civilian members of the faculty and staff under salary schedules and grant retirement and other related benefits prescribed by the Secretary of Defense so as to place the employees of the USUHS on a comparable basis with the employees of fully accredited schools of the health professions within the vicinity of the District of Columbia, as provided by law (reference (b)).

9.4. Exercise the administrative authorities contained in enclosure 2.

10. EFFECTIVE DATE

This Directive is effective immediately.

John J. Hamre
Deputy Secretary of Defense

Enclosures - 2
- E1. References, continued
- E2. Delegations of Authority

E1. ENCLOSURE 1

REFERENCES, continued

(e) Title 5, United States Code
(f) DoD Directive 5136.1, "Assistant Secretary of Defense for Health Affairs (ASD(HA))," May 27, 1994
(g) DoD Directive 8910.1, "Management and Control of Information Requirements," June 11, 1993

E2. ENCLOSURE 2

DELEGATIONS OF AUTHORITY

E2.1.1. Under the authority vested in the Secretary of Defense, and subject to the authority, direction, and control of the Secretary of Defense, the Under Secretary of Defense for Personnel and Readiness, and the ASD(HA), the President of the USUHS is hereby delegated authority, subject to paragraph E2.1.2., below, as required in the administration and operation of the USUHS, to:

E2.1.1.1. Exercise the powers vested in the Secretary of Defense by 5 U.S.C. 301, 302(b), 3101, and 5107 on the employment, direction, and general administration of USUHS civilian personnel.

E2.1.1.2. Fix rates of pay for wage-rate employees exempted from the "Classification Act of 1949" by 5 U.S.C. 5102 on the basis of rates established under the Federal Wage System. The fixing of such rates shall follow the wage schedule established by the DoD Wage Fixing Authority.

E2.1.1.3. Administer oaths of office to those entering the Executive Branch of the Federal Government, in accordance with 5 U.S.C. 2903, and designate in writing, as may be necessary, officers and employees of the USUHS to perform that function.

E2.1.1.4. Establish a USUHS Incentive Awards Board and pay cash awards to, and incur necessary expenses for the honorary recognition of, civilian employees of the Government whose suggestions, inventions, superior accomplishments, or other personal efforts, including special acts or services, benefit or affect the USUHS or its subordinate activities, in accordance with 5 U.S.C. 4503; Office of Personnel Management (OPM) regulations; and DoD 1400.25-M, "DoD Civilian Personnel Manual (CPM)," Chapter 400, Subchapter 451, "Awards," December 1996, authorized by DoD Directive 1400.25, November 25, 1996.

E2.1.1.5. Maintain an official seal and attest to the authenticity of official USUHS records under that seal.

E2.1.1.6. Establish advisory committees and employ part-time advisors, as approved by the Secretary of Defense, for the performance of USUHS functions,

consistent with the 10 U.S.C. 173, 5 U.S.C. 3109(b), and DoD Directive 5105.4, "Department of Defense Federal Advisory Committee Management Program," September 5, 1989.

E2.1.1.7. In accordance with Executive Order (E.O.) 10450, "Security Requirements for Government Employment," April 27, 1953; E.O. 12333, "United States Intelligence Activities," December 4, 1981; and E.O. 12968, "Access to Classified Information," August 4, 1995; and DoD Directive 5200.2, "DoD Personnel Security Program (DoDSP)," April 9, 1999, as appropriate:

E2.1.1.7.1. Designate any position in the USUHS as a "sensitive" position.

E2.1.1.7.2. Authorize, in case of an emergency, the appointment of a person to a sensitive position in the USUHS for a limited period of time and for whom a full field investigation or other applicable investigation, including the National Agency Check, has not been completed.

E2.1.1.7.3. Initiate personnel security investigations, and, if necessary, in the interest of national security, suspend a security clearance for personnel assigned, detailed to, or employed by the USUHS. Any action under this paragraph shall be taken, in accordance with procedures prescribed in DoD 5200.2-R, "DoD Personnel Security Program," January 1987, authorized by DoD Directive 5200.2, April 9, 1999.

E2.1.1.8. Act as the agent for the collection and payment of employment taxes imposed by Chapter 21 of the Internal Revenue Code of 1954, as amended; and, as such agent, make all determinations and certifications required or provided for under Section 3122 of the Internal Revenue Code of 1954, as amended, and Sections 205(p)(1) and 205(p)(2) of the "Social Security Act," as amended (42 U.S.C. 405(p)(1) and 405(p)(2)), about USUHS employees.

E2.1.1.9. Authorize and approve the following:

E2.1.1.9.1. Temporary duty travel for military personnel assigned or detailed to the USUHS, in accordance with the Joint Federal Travel Regulations (JFTR), Volume 1, "Uniformed Service Members," current edition.

E2.1.1.9.2. Travel for USUHS civilian personnel, in accordance with the Joint Travel Regulations (JTR), Volume 2, "DoD Civilian Personnel," current edition.

E2.1.1.9.3. Invitational travel to non-DoD employees whose

consultative, advisory, or other highly specialized technical services are required in a capacity that is directly related to, or with, USUHS activities, in accordance with the JTR, Volume 2, "DoD Civilian Personnel," current edition.

E2.1.1.9.4. Overtime work for the USUHS civilian personnel, in accordance with 5 U.S.C. Chapter 55, Subchapter V, and applicable OPM regulations.

E2.1.1.10. Approve the expenditure of funds available for travel by military personnel assigned or detailed to the USUHS for expenses incident to attendance at meetings of technical, scientific, professional, or other similar organizations in such instances when the approval of the Secretary of Defense, or designee, is required by 37 U.S.C. 412 and 5 U.S.C. 4110 and 4111.

E2.1.1.11. Develop, establish, and maintain an active and continuing Records Management Program under 44 U.S.C. 3102 and DoD Directive 5015.2, "DoD Records Management Program," April 11, 1997.

E2.1.1.12. Utilize the Government purchase card for making micro-purchases of material and services, other than personal services, for the USUHS, when it is determined more advantageous and consistent with the best interests of the Government.

E2.1.1.13. Authorize the publication of advertisements, notices, or proposals in newspapers, magazines, or other public periodicals, as required for the effective administration and operation of the USUHS, consistent with 44 U.S.C. 3702.

E2.1.1.14. Establish and maintain, for the functions assigned, an applicable publications system for the promulgation of common supply and service regulations, instructions, and reference documents, and changes thereto, under the policies and prescribed procedures in DoD 5025.1-M, "Department of Defense Directives System Procedures," August 1994, authorized by DoD Directive 5025.1, June 24, 1994.

E2.1.1.15. Enter into support and service agreements with the Military Departments, the other DoD Components, and the other Government Agencies, as required for the effective performance of USUHS functions and responsibilities.

E2.1.1.16. Enter into and administer contracts, directly or through a Military Department, a DoD contract administration services component, or other Federal Agency, as applicable for supplies, equipment, and services required to accomplish the mission of the USUHS. To the extent that any law or E.O. specifically limits the exercise of such authority to persons at the Secretariat level, such authority shall be

exercised by the applicable Under Secretary of Defense or Assistant Secretary of Defense.

E2.1.1.17. Establish and maintain appropriate property accounts for the USUHS, and appoint Boards of Survey, approve reports of survey, relieve personal liability, and drop accountability for USUHS property in the authorized property accounts that is lost, damaged, stolen, destroyed, or otherwise rendered unserviceable, in accordance with applicable laws and regulations.

E2.1.1.18. Promulgate the necessary security regulations for the protection of property and places under the jurisdiction of the President of the USUHS, under DoD Directive 5200.8, "Security of DoD Installations and Resources," April 25, 1991.

E2.1.1.19. Exercise the authority delegated to the Secretary of Defense by the Administrator of the General Services Administration for the disposal of surplus personal property.

E2.1.2. The delegations of authority provided by paragraph E2.1.1, above, are also subject to the following, in order of precedence:

E2.1.2.1. The authority, direction, and control of the ASD(HA).

E2.1.2.2. The management direction and control of the USUHS Executive Committee.

E2.1.2.3. Regulations and procedures of the DoD Executive Agent, applicable to the USUHS, under section 7.2. of this Directive, for administration of the USUHS.

E2.1.3. The President of the USUHS may redelegate those authorities, as applicable, and in writing, except as otherwise specifically indicated in paragraph E2.1.1. through subparagraph E2.1.2.3., above, or as otherwise provided by law or regulation.

CHARTER

THE BOARD OF REGENTS
OF THE
UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

A. **Official Designation:** The Advisory Committee shall be known as the Board of Regents of the Uniformed Services University of the Health Sciences (USUHS). As an advisory committee, the Board will be governed by the provisions of the Federal Advisory Committee Act (FACA), the GSA Final Rule (41 C.F.R. Part 101-6), and DoD Directive 5105.4, the "DoD Federal Advisory Committee Management Program."

B. **Objective and Scope of Activity:** To provide advice and guidance to the Secretary of Defense through the Assistant Secretary of Defense for Health Affairs for the operation of the Uniformed Services University of the Health Sciences. To assure that said operation is in the best tradition of academia and in compliance with the appropriate accreditation authorities.

C. **Period of Time Required:** This Committee is established pursuant to 10 U.S.C. 2112 et seq. and exists indefinitely.

D. **Official or Sponsoring Proponent to Whom the Committee Reports:** The Secretary of Defense through the Assistant Secretary of Defense for Health Affairs.

E. **Support Agency:** The Uniformed Services University of the Health Sciences.

F. **Duties and Responsibilities:**

1. The business of the University shall be conducted by the Secretary of Defense through the Assistant Secretary of Defense for Health Affairs and the USUHS Executive Committee with the advice of the Board of Regents (hereinafter referred to as the "Board") with funds appropriated for and provided by the Department of Defense within the Defense Health Program. The Board shall consist of

a. nine persons outstanding in the fields of health and health education who shall be appointed from civilian life by the President of the United States, by and with the advice and consent of the Senate;

b. the Secretary of Defense, or designee, who shall be an ex-officio member;

c. the Surgeons General of the Uniformed Services, who shall be ex-officio members; and

d. the person referred to in subsection (4).

2. The term of office for each member of the Board (other than an ex-officio member) shall be six years except that

a. any member appointed to fill a vacancy occurring before the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term;

b. any member whose term of office has expired shall continue to serve until his successor is appointed.

3. One of the members of the Board (other than an ex-officio member) shall be designated by the President as Chairman and shall be the presiding officer of the Board.

4. The Board shall provide advice regarding the appointment of a President of the University (hereinafter in this charter referred to as the "President") who shall also serve as a non-voting ex-officio member of the Board. The Board shall also provide advice regarding the appointment of a Dean of the Medical School and Dean of the Graduate School of Nursing.

5. Members of the Board (other than ex-officio members) while attending conferences or meetings or while otherwise performing their duties as members shall be entitled to receive compensation at a rate to be fixed by the Secretary of Defense, but not exceeding $100.00 per diem and shall also be entitled to receive an allowance for necessary travel expenses while so serving away from their place of residence.

6. The Board may recommend academic titles, as appropriate, upon military and civilian members of the faculty. The Board may recommend the awarding of appropriate academic degrees to successful candidates.

7. The Board is authorized to recommend negotiation of agreements with agencies of the Federal Government to utilize on a reimbursable basis appropriate existing Federal medical resources located in or near the District of Columbia. Under such agreements the facilities will retain their identities and basic missions. The Board is also authorized to recommend affiliation agreements with an accredited university or universities. Such agreements may include provisions for payments for educational services provided students participating in Department of Defense educational programs.

8. The Board may recommend establishment of postdoctoral, postgraduate, and technological institutes.

9. The Board may recommend establishment of programs in continuing medical education for military members of the health professions to the end that high standards of health care may be maintained within the military medical services.

10. The Board may recommend to the Assistant Secretary of Defense for Health Affairs that the University, upon approval of the Secretary of Defense, may enter into agreements with foreign military medical schools for reciprocal education programs under which students at the University receive specialized military medical instruction at the foreign military medical school and military medical personnel of the country of such medical school receive specialized military medical instruction at the University. Any such agreement may be made on a reimbursable basis or a nonreimbursable basis.

11. In carrying out the specific functions listed above and in performing other activities, the Board shall serve as the primary advisor to the Secretary of Defense, to the Assistant Secretary of Defense (Health Affairs), to the USUHS Executive Committee, and to the President of USUHS concerning academic affairs of the University.

G. **Estimated Annual Operating Costs and Estimated Man-Years:** $186,700.00; 2.2 FTE

H. **Number of Meetings:** This Committee is established by statute, 10 U.S.C. 2112 et seq., and shall meet at least four (4) times per year and as often as the Secretary or Chairperson of the Board shall deem necessary to conduct University business.

I. **Termination Date:** The Committee by statute has no termination date (Cf Sec. 8091, P.L. 101-511, DoD Appropriations Act, 1991).

J. **Date Charter is Filed:** April 4, 2003

Bylaws
of the
Uniformed Services University of the Health Sciences
Board of Regents

Article I

Name

The Advisory Committee shall be known as the Board of Regents of the Uniformed Services University of the Health Sciences (USUHS).

Official Designation

As a federal advisory committee, the Board will be governed by the provisions of the Federal Advisory Committee Act (FACA), the GSA Final Rule (41 C.F.R. Part 101-6), DoD Directive 5105.4, "Federal Advisory Committee Management Program," and DoD Directive 5105.45, "Uniformed Services University of the Health Sciences."

Article II

Purpose and Objective

A. The purpose of the Board of Regents shall be to provide advice and guidance to the Secretary of Defense through the Assistant Secretary of Defense for Health Affairs and also to the USUHS Executive Committee for the operation of the Uniformed Services University of the Health Sciences.

B. To assure that said operation is in the best tradition of academia and in compliance with the appropriate accreditation authorities.

C. Other specific purposes as identified in DoD Directive 5105.45.

Article III

Members
The Board shall consist of:

A. Nine persons, outstanding in the fields of health and health education, who shall be appointed from civilian life by the President of the United States, by and with the advice and consent of the Senate;

B. The Secretary of Defense, or designee, who shall be an ex-officio Member;

C. The Surgeons General of the Uniformed Services, or their designees, who shall be ex-officio Members; and

D. The President/Dean of the University who shall also serve as a non-voting ex-officio Member of the Board.

Term of Office
The term of office for each Member of the Board (other than an ex-officio Member) shall be six years except:

A. Any Member appointed to fill a vacancy, occurring before the expiration of the term for which his predecessor was appointed, shall be appointed for the remainder of such term;

B. Any Member whose term of office has expired shall continue to serve until a successor is appointed. These appointments will be renewed annually on the anniversary of the original appointment date.

Appointment of Chair

One of the Members of the Board (other than ex-officio Members) shall be designated by the President of the United States as Chair and shall be the Presiding Officer of the Board. The term of the Chair shall continue until a successor is appointed.

Selection of Vice-Chair

The Chair shall appoint a person to serve as Vice Chair.

Article IV

Duties and Responsibilities

A. The Board shall advise the Secretary of Defense, through the Assistant Secretary of Defense, regarding the appointment of the President of the University and the appointments of Deans to the School of Medicine and the Graduate School of Nursing, and approve the nomination from the Deans of the Schools of the Department Chairs. (See U.S. Code Title 10, Section 2113, attached.)

B. The Board shall be informed by the President of the University of appointments of associate deans and assistant deans.

C. The Board shall recommend the awarding of appropriate academic degrees to successful candidates.

D. The Board will ensure that the University maintains appropriate accreditation requirements.

E. The Board shall act upon recommendations made by the Committees on Appointments, Promotion, and Tenure.

F. The Board shall act upon recommendations made to establish new academic programs. A reading will occur when a proposal is presented; action will be taken at the next regularly scheduled subsequent meeting.

G. The Board shall perform other duties as deemed appropriate and within its charter.

Article V

Advisors

A. The Deans of the Schools are advisors to the Board.

B. The Commanders of affiliated teaching hospitals are advisors to the Board.

C. A military advisor to the Board will provide guidance from an operational perspective.

D. The Board may invite other individuals to be advisors.

Article VI

Committees

A. Executive Committee of the Board of Regents

Designation

The Board shall designate a body as the Executive Committee. The Executive Committee shall report to the Board.

Purpose

The Committee shall be responsible for conducting Board business between Board meetings. Actions taken by the Committee shall be submitted for ratification at the next regularly scheduled meeting.

Membership

The Committee will be composed of:

a. Chair, Board of Regents
b. Vice Chair, Board of Regents
c. Chair, USU Executive Committee
d. Two members selected by the Board
e. President, USU

Meetings

The Executive Committee of the Board of Regents will meet either at the call of the Chair or at the request of any two members other than the Chair. Meetings may be held in person or via conference call.

B. Ad Hoc Committees

Designation

The Board, as a body, shall designate ad hoc committees as necessary.

Purpose

Each such ad hoc committee shall be responsible for in-depth consideration of assigned Board agenda items and/or special projects between scheduled meetings.

Membership

The Chair of the Board of Regents will appoint ad hoc committee members.

Meetings

Each ad hoc committee will meet either at the call of its Chair, or at the request of any two members other than the Chair of the committee. Meetings may be held in person or via conference call.

Article VII

General Procedures

A. Regular Meetings

(1) The Board will hold at least four (4) meetings in an annual period from October 1 to September 30, or as often as the Secretary of Defense or Chair of the Board shall deem necessary to conduct University business.

(2) Unless otherwise determined by the Board, meetings will be held in the Board of Regents conference room at the University, 4301 Jones Bridge Road, Bethesda, MD 20814.

B. Additional Meetings

(1) Additional meetings will be called by the Executive Secretary upon the direction of the Chair, the President of the University, or written request of three or more Regents.

(2) Additional meetings of the Board will be held at such times and places as will be specified in the notice of the meeting.

C. Notice of Meetings

(1) Notice of all meetings of the Board shall be sent by the Secretary to each Regent by mail, fax, electronic mail (e-mail), or telephone.

(2) The Secretary shall mail a notice not less than fifteen (15) days before any regular meeting. Faxing, e-mailing, or telephoning a notice shall be done not less than seven (7) days before a regular meeting.

(3) The recital by the Secretary in the minutes that notice was given shall be sufficient evidence of the fact.

(4) Public Announcement of the meetings of the full Board will appear in the Federal Register as provided in the Government in the Sunshine Act. (5 U.S.C. 552b(e)(3))

D. Quorum

A majority of all Members will constitute a quorum of the Board. As currently constituted, a quorum means at least eight (8) members must be present in person or via electronic means.

E. Voting

(1) During a meeting, if a quorum is called for by a member and found not to be present, no further business may be transacted.

(2) During a meeting, issues will be determined by voice balloting, unless an individual Member requires a written ballot.

(3) The Chair of the Board is a Member of the voting assembly and has the right to vote as any other Member when the vote is by ballot.

(4) Unless otherwise specified, a simple majority vote will determine matters of issue before the Board. In the event of a tie vote, the proposed resolution is lost.

(5) At the direction of the Chair, action may also be taken by a majority of the Members by notation voting (that is to say by voting on material circulated to the Members individually or serially, or by polling of Members individually or collectively by mail, telephone, fax, e-mail or similar procedure). Such action will be reported by the Secretary at the next Board Meeting.

(6) The Secretary of Defense, or the Secretary's designee, is authorized to vote.

(7) The Surgeons General of the Uniformed Services, or their duly appointed designees, are authorized to vote. The President/Dean of the University is precluded by DoD Directive 5105.45 from voting.

F. Order of Business

The order of business will be at the discretion of the Chair unless otherwise specified by the Board.

G. Rules of Order

In the determination of all questions of parliamentary usage, the decision of the Chair or presiding officer will be based upon the latest available revision of "Robert's Rules of Order."

Article VIII

Amendment of Bylaws

A. Amendments

These Bylaws may be amended at any meeting of the Board of Regents as long as each proposed amendment has been provided to Members at least 60 days before the next scheduled meeting. Amendments will take effect by the affirmative vote of two-thirds (2/3) of the Members present.

Effective Date:

These Bylaws are effective February 6, 2001.

Lonnie R. Bristow, M.D., Chair, Board of Regents

CHARTER

THE EXECUTIVE COMMITTEE OF THE UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

A. Official Designation: The committee shall be known as the Executive Committee of the Uniformed Services University of the Health Sciences. The committee shall be governed by the provisions of Department of Defense Directive 5105.18, "DoD Committee Management Program," February 8, 1999.

B. Objective and Scope of Activity: To provide for the management and supervision of the Uniformed Services University of the Health Sciences. To assure that the operation of the University is in compliance with appropriate Department of Defense Directives, Instructions and Regulations. To ensure the President of the University shall have execution authority direction and control of USUHS and report to the Executive Committee. To facilitate accomplishment of the function's of the ASD(HA), the Surgeons General, and the Executive Agent as described in DoD Directive 5105.45, "Uniformed Services University of the Health Sciences."

C. Period of Time Required: This Committee is established pursuant to Program Budget Decision 711 of December 17, 1997 and will exist until rescinded by the Secretary of Defense.

D. Official of Sponsoring Proponent to Whom the Board Reports: Assistant Secretary of Defense (Health Affairs).

E. Duties and Responsibilities:

1. The business of the University shall be conducted under the management and supervision of the Executive Committee with Defense Health Program and other funds appropriated for and provided by the Department of Defense through the Department of the Navy as the Executive Agent.

2. The Executive Committee shall consist of the Surgeons General of the Military Services. The membership will determine the Chair.

3. The Executive Committee will be guided by the advice of the USUHS Board of Regents on academic affairs.

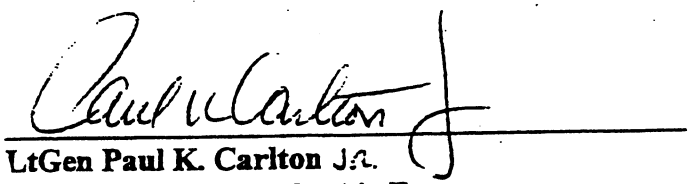
4. The Executive Committee will oversee matters involving programming, budgeting and funding execution. In this regard, budgets approved by the Executive Committee will be presented by the Executive Agent to the Defense Health Program as a part of its responsibility for the planning, programming and budgeting execution system of the USUHS.

F. Signature Authority: The Chair has authority to transmit decisions upon which the Executive Committee has reached unanimity. In the absence of a member of the Executive Committee, the representative of a Surgeon General is authorized to participate in the decision-making process.

G. Number of Meetings: The Executive Committee shall meet at the call of the Chair but not less than quarterly.

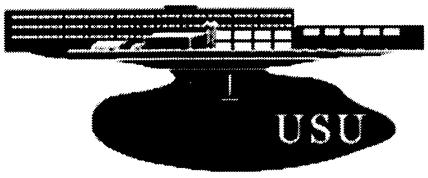
Charter Approved, December 18, 2000:

VADM Richard A. Nelson
Surgeon General of the Navy
Chair



LtGen Paul K. Carlton Jr.
Surgeon General of the Air Force
Member

LTG James B. Peake
Surgeon General of the Army
Member



Strategic Plan

A Message from the President

The University Strategic Plan has become the core document with which the University is formulating its future. In accordance with good management practices, we have aligned our plan with the Department of Defense Medical Health System (MHS) Business Plan.

In April 2001, the University senior staff, teaching hospital representatives, Chair of the Board of Regents, and representatives of the Surgeons General held a very productive three-day retreat to review our strategic plan. We examined our strengths, weaknesses, opportunities, and threats. As a result, we identified seven new goals and over forty objectives, of which 28 were selected to be worked on in FY 2002. Since last year, over 200 people have been working on these objectives to meet our mission of "Learning to care for those in harm's way."

I believe that a useful plan is always a work-in-progress. We will constantly refer to the strategic plan as our beacon, but will adjust a few points of the compass as the University deals with the changing environment.

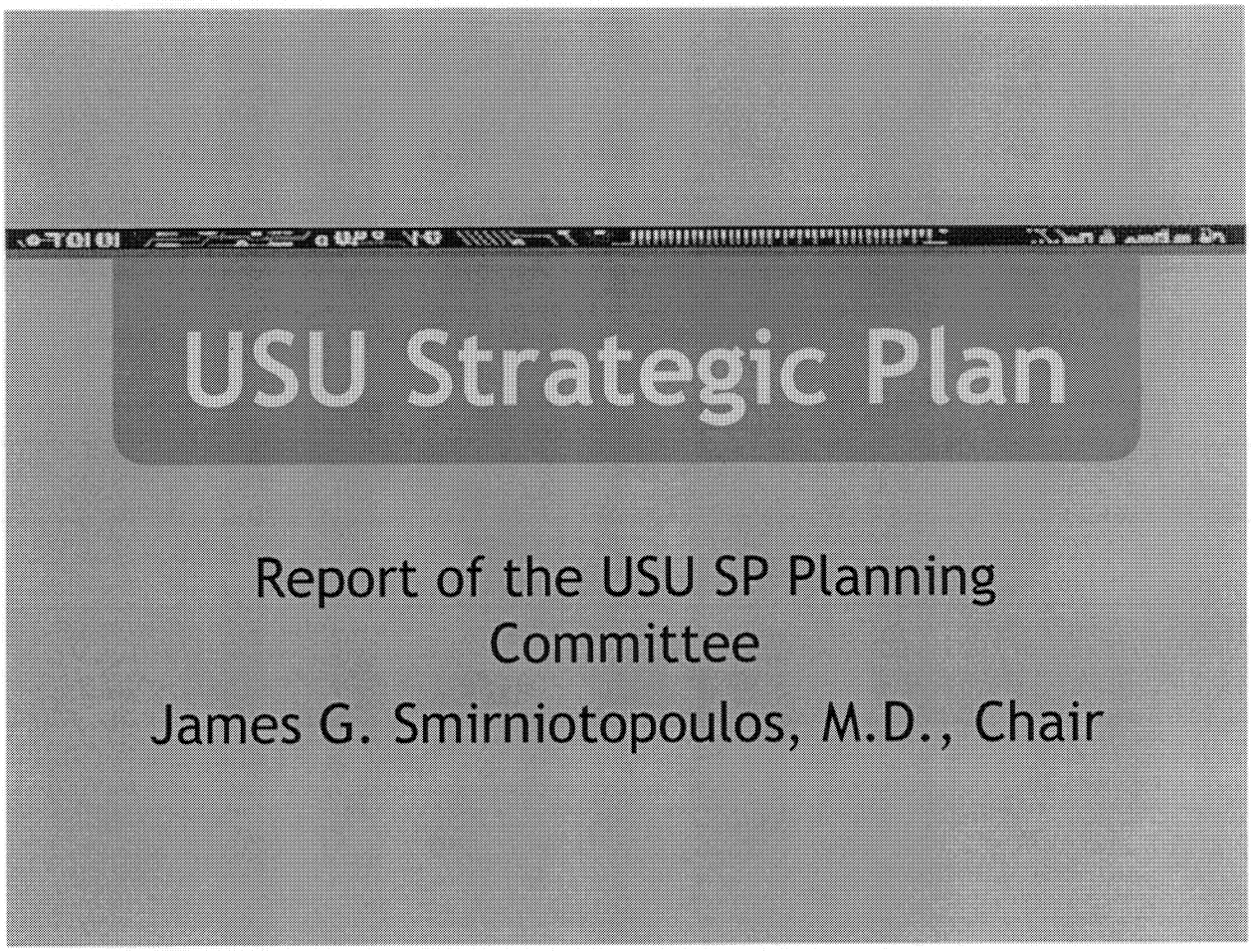
I invite you to read this plan, coming back occassionally as new objectives and strategies are added. Please feel free to share your thoughtful comments.

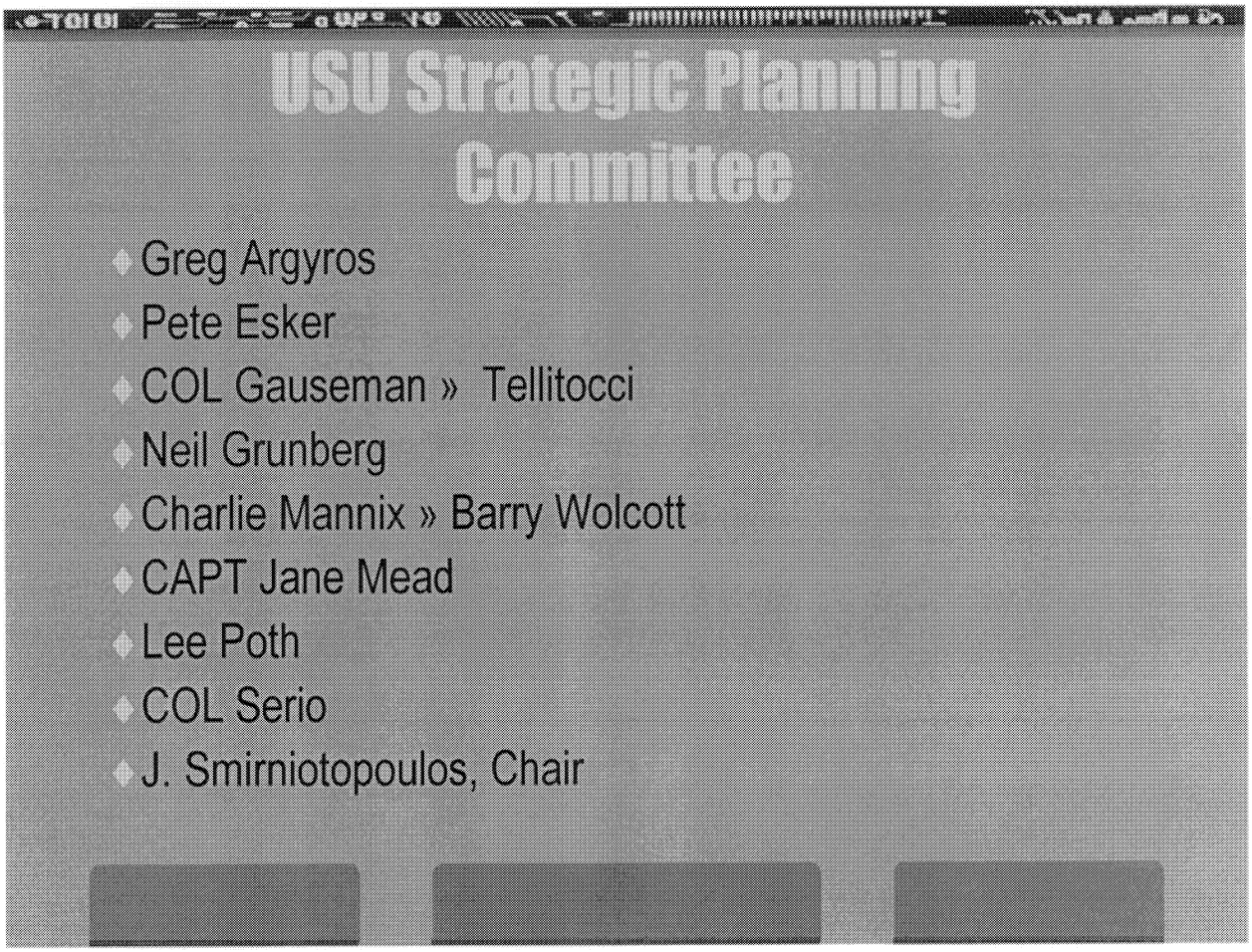
This is our strategic plan to guide the University in the 21st century. This strategic plan has no value if it is filed or posted and ignored; it becomes an effective and dynamic plan directed towards the University's vision when we are all involved in its creation and maintenance. Your input is important, welcomed, and appreciated.

James A. Zimble, M.D.
President

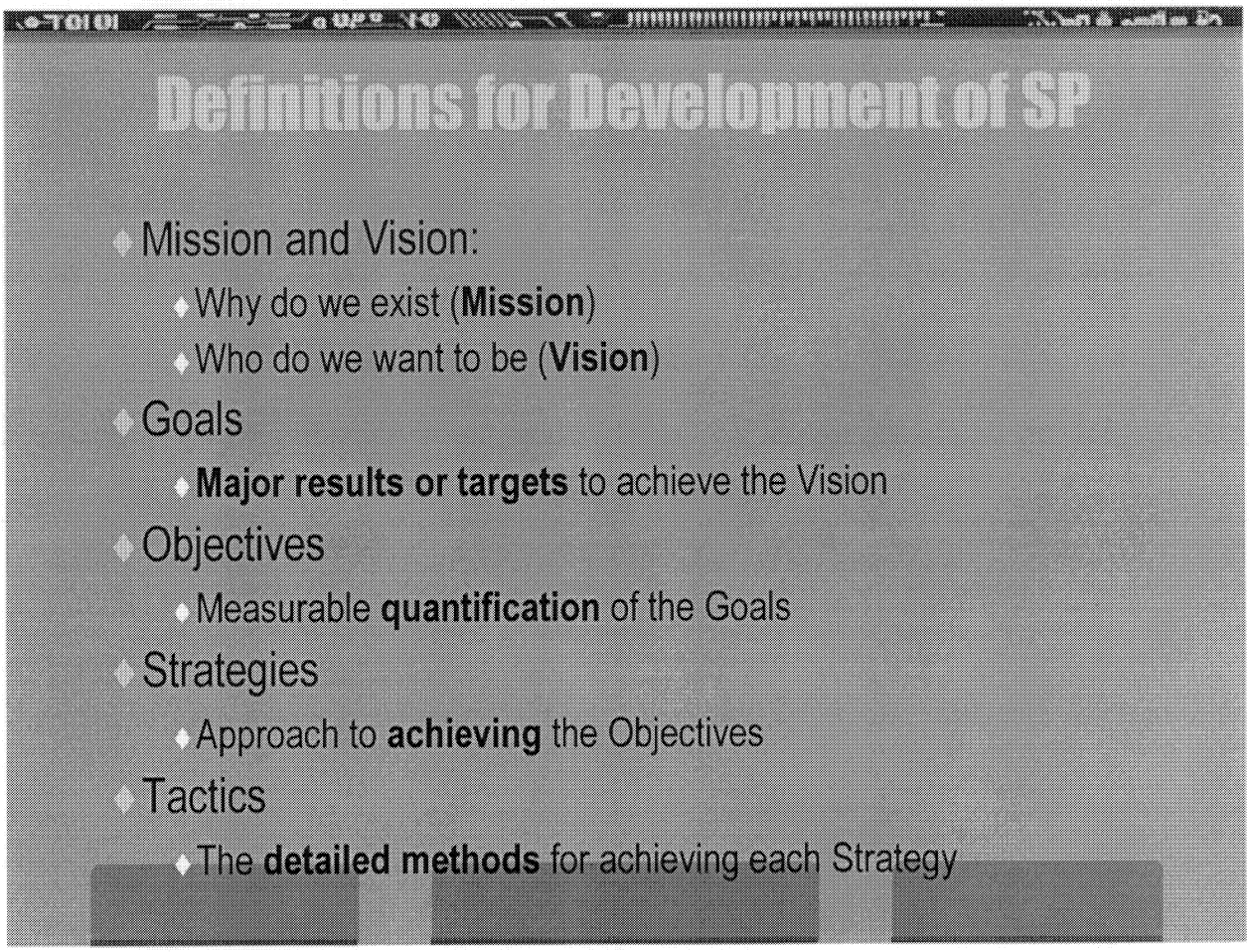
[USU Home] | [Disclaimer]

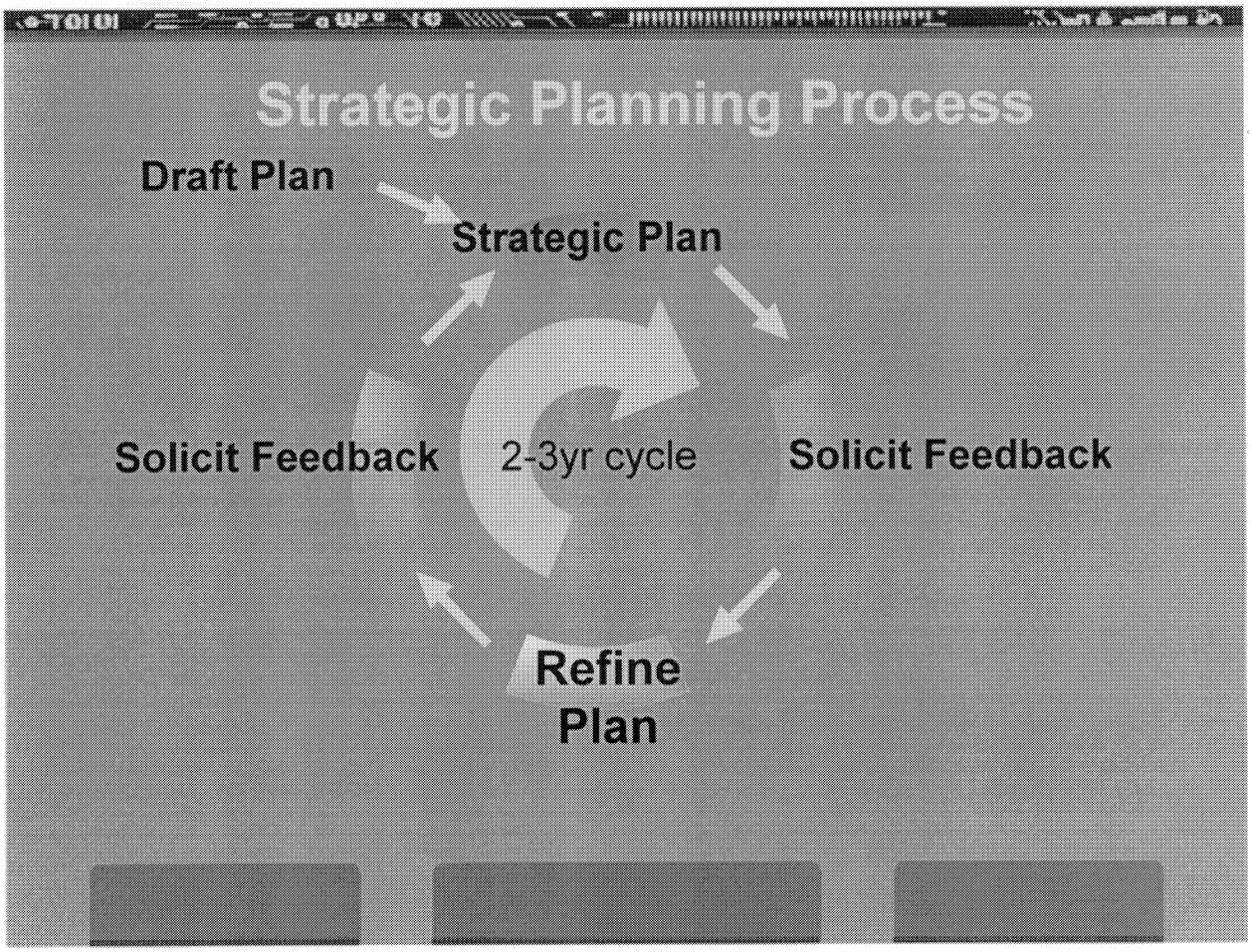
Questions or comments about this site?
Contact our webmaster at: webmaster@usuhs.mil
Last update: 04/02/04

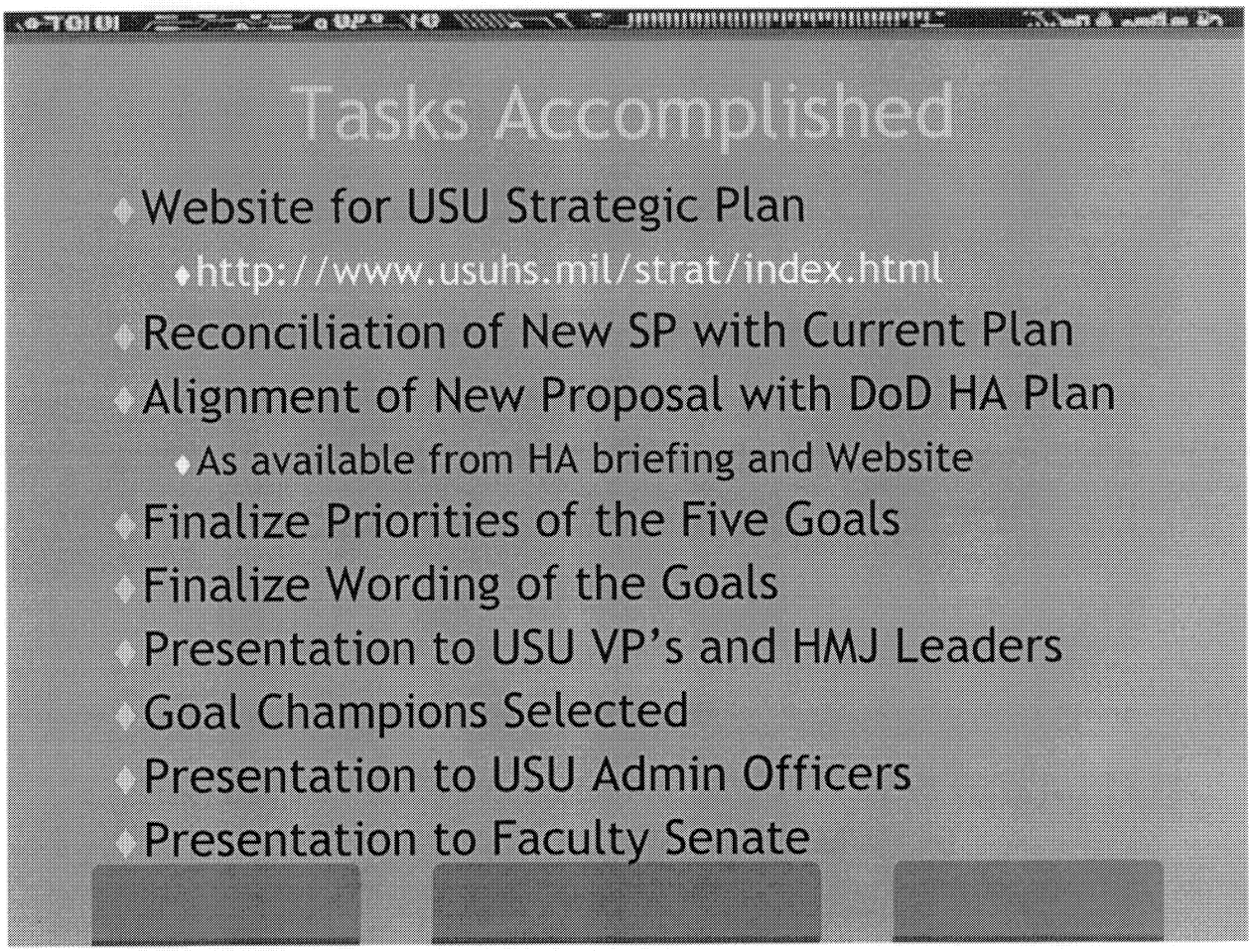

USU Strategic Plan
Report of the USU SP Planning Committee
James G. Smirniotopoulos, M.D., Chair

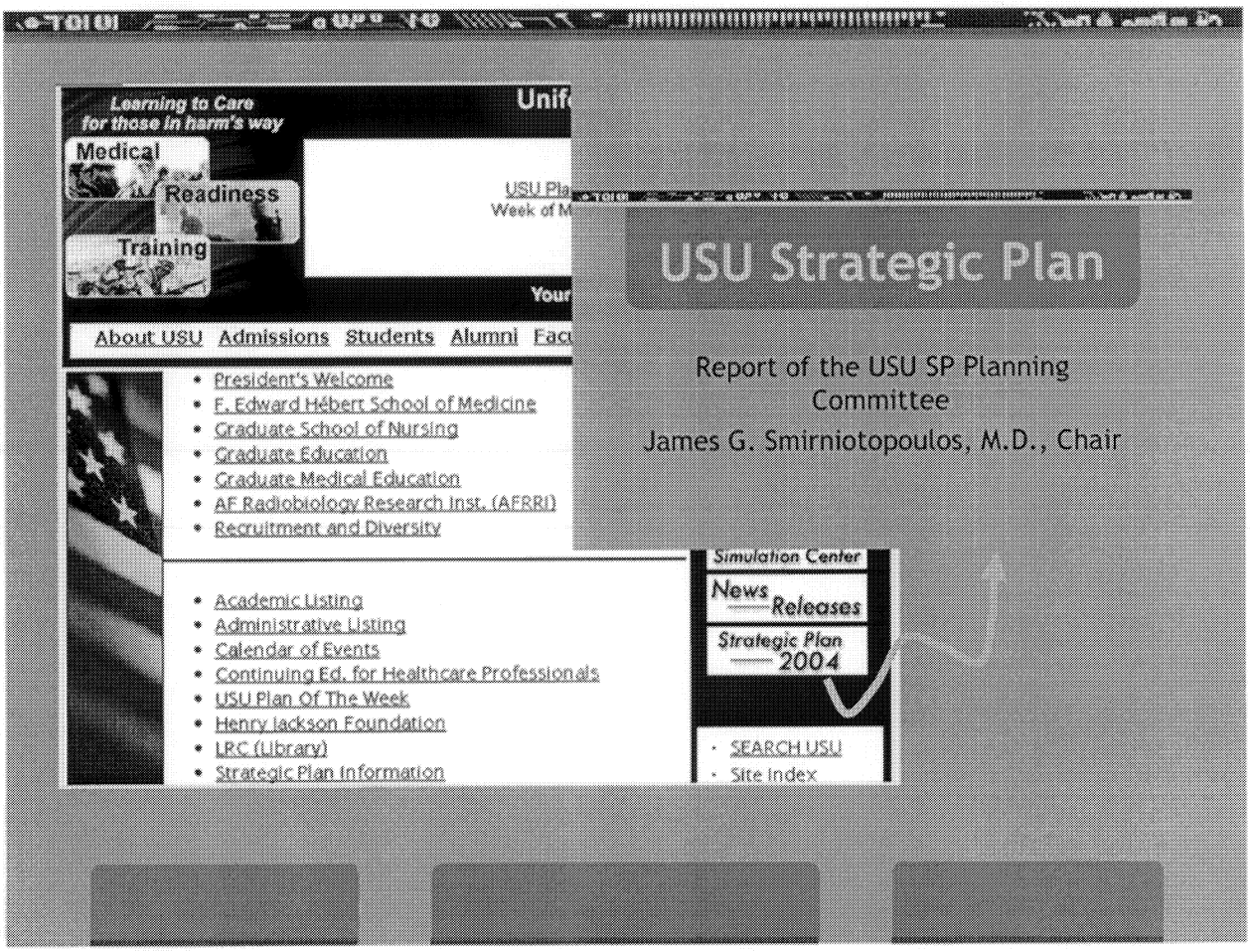

USU Strategic Planning Committee
Greg Argyros
Pete Esker
COL Gauseman » Tellitocci
Neil Grunberg
Charlie Mannix » Barry Wolcott
CAPT Jane Mead
Lee Poth
COL Serio
J. Smirniotopoulos, Chair


"Because
we've always
done it that
way"


Definitions for Development of SP
Mission and Vision:
Why do we exist (**Mission**)
Who do we want to be (**Vision**)
Goals
Major results or targets to achieve the Vision
Objectives
Measurable **quantification** of the Goals
Strategies
Approach to **achieving** the Objectives
Tactics
The **detailed methods** for achieving each Strategy


Strategic Planning Process
Draft Plan
Strategic Plan
Solicit Feedback
2-3yr cycle
Solicit Feedback
Refine Plan


Tasks Accomplished
Website for USU Strategic Plan
http://www.usuhs.mil/strat/index.html
Reconciliation of New SP with Current Plan
Alignment of New Proposal with DoD HA Plan
As available from HA briefing and Website
Finalize Priorities of the Five Goals
Finalize Wording of the Goals
Presentation to USU VP's and HMJ Leaders
Goal Champions Selected
Presentation to USU Admin Officers
Presentation to Faculty Senate


Learning to Care
for those in harm's way
Medical
Readiness
Training
About USU Admissions Students Alumni
President's Welcome
F. Edward Hébert School of Medicine
Graduate School of Nursing
Graduate Education
Graduate Medical Education
AF Radiobiology Research Inst. (AFRRI)
Recruitment and Diversity
Academic Listing
Administrative Listing
Calendar of Events
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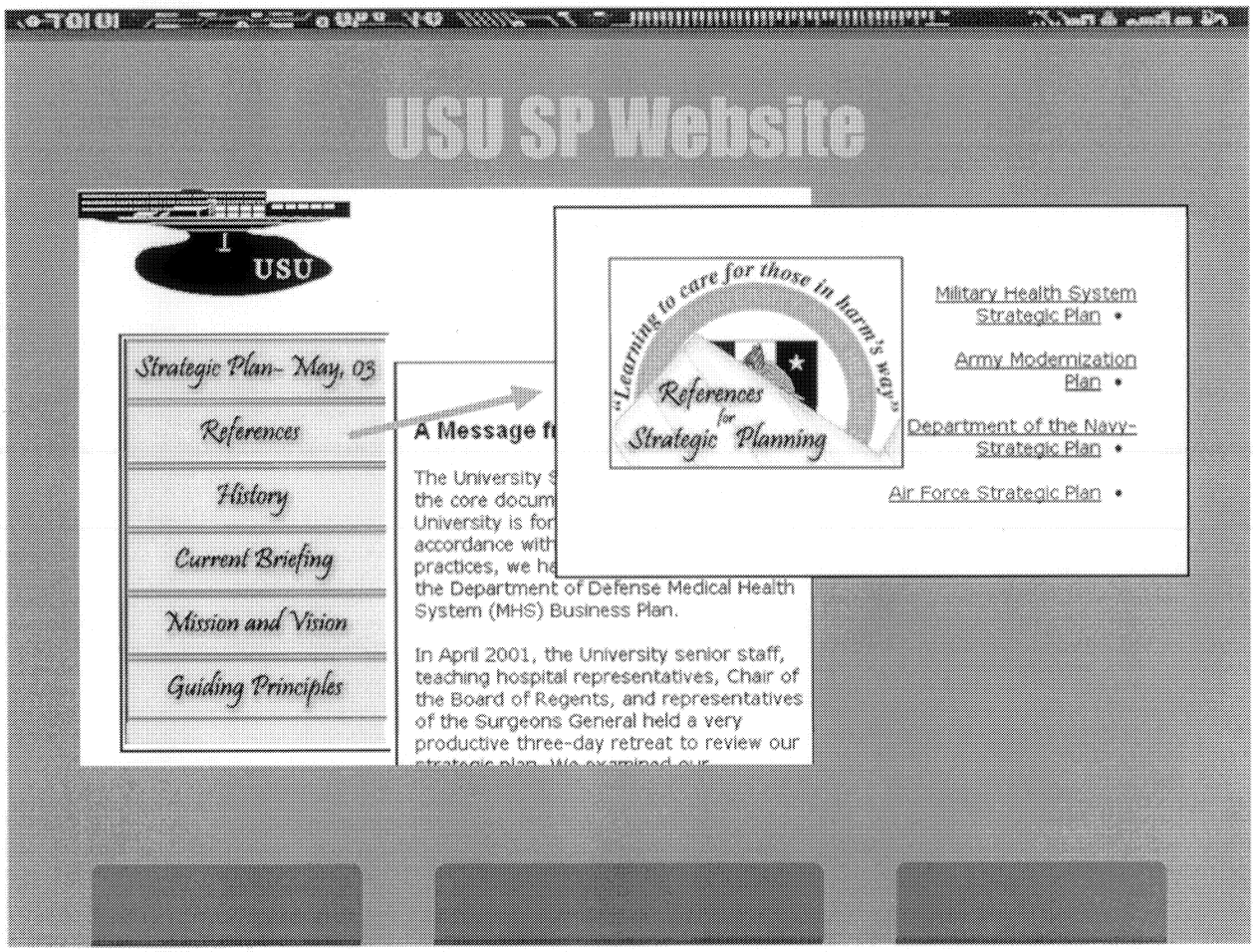
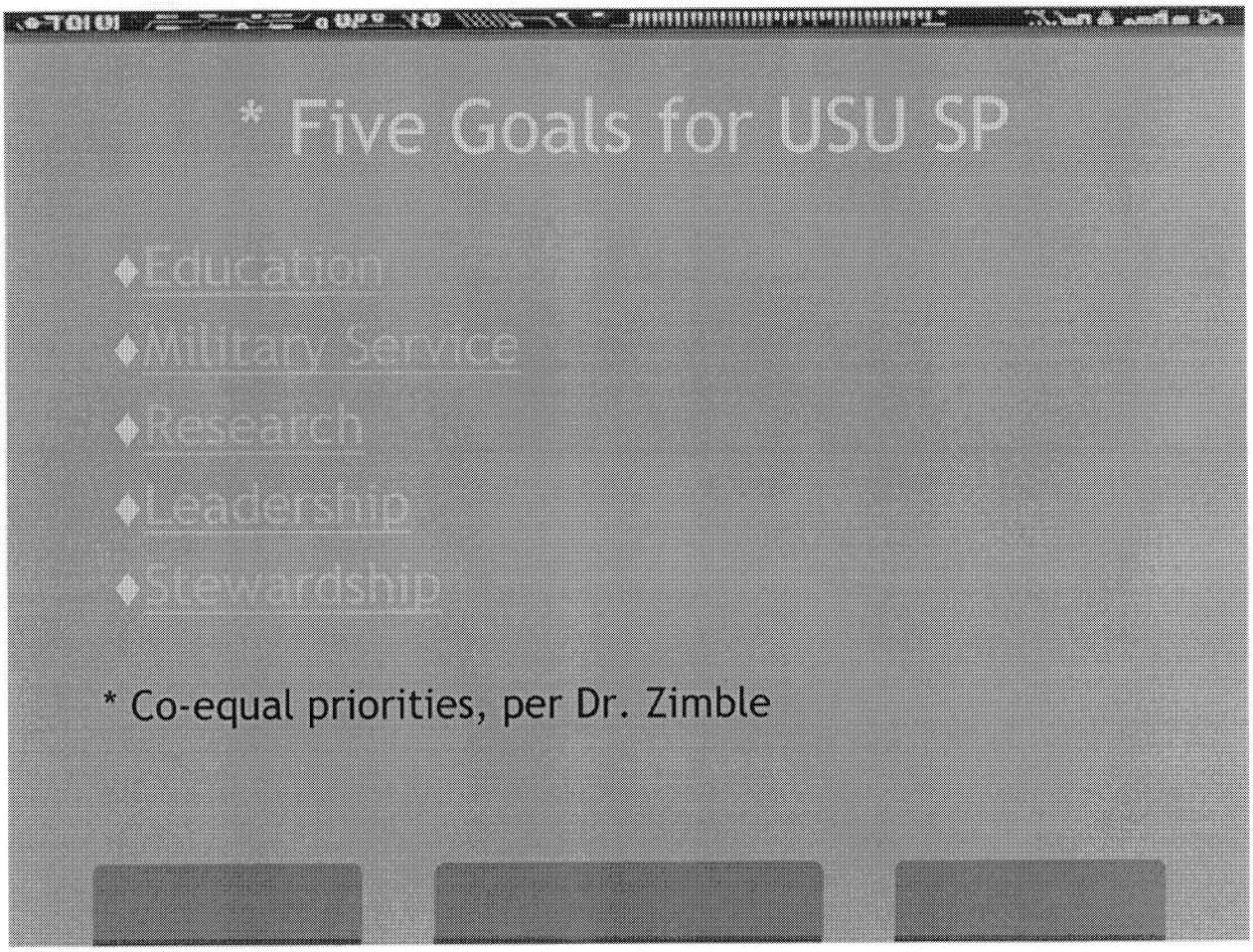
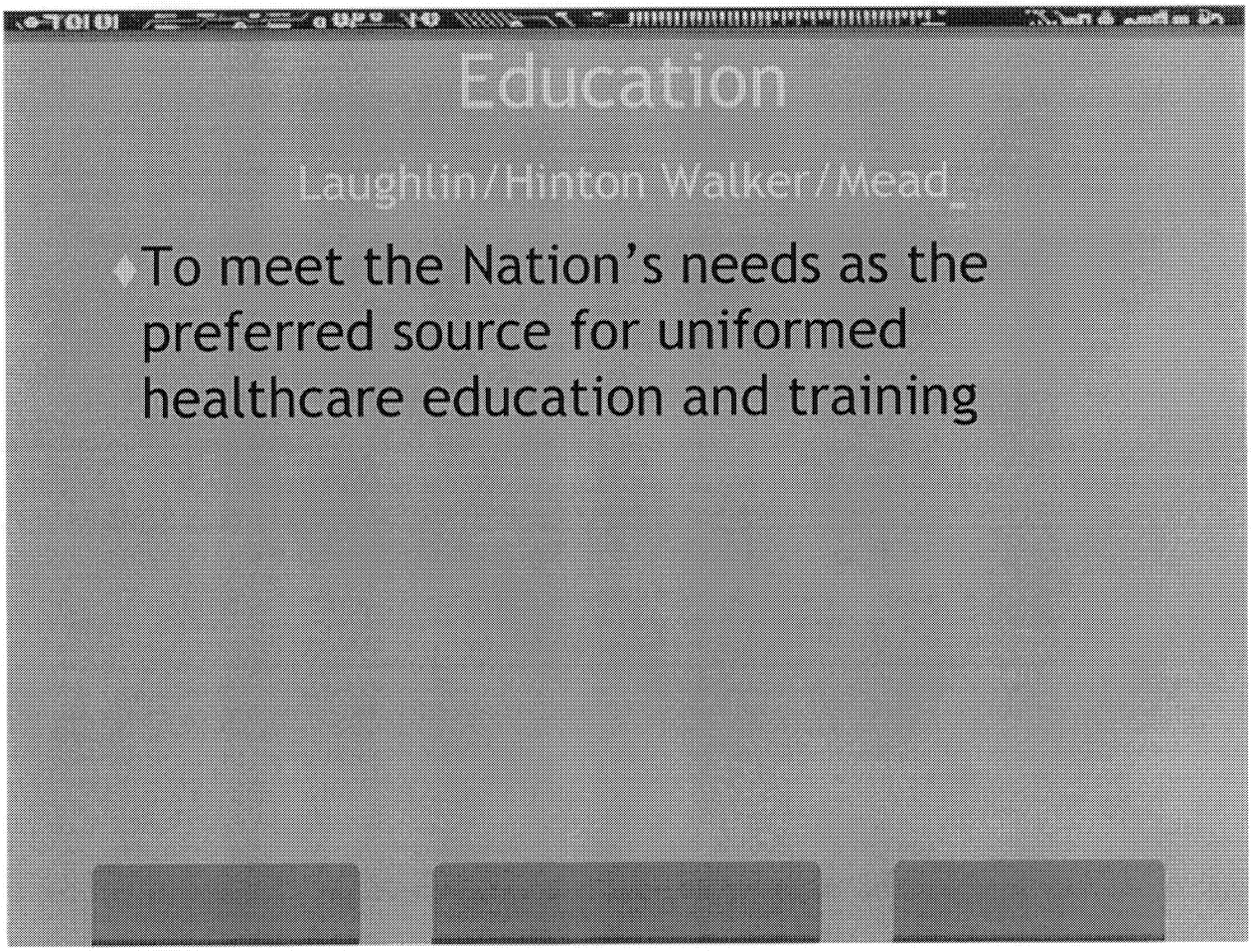
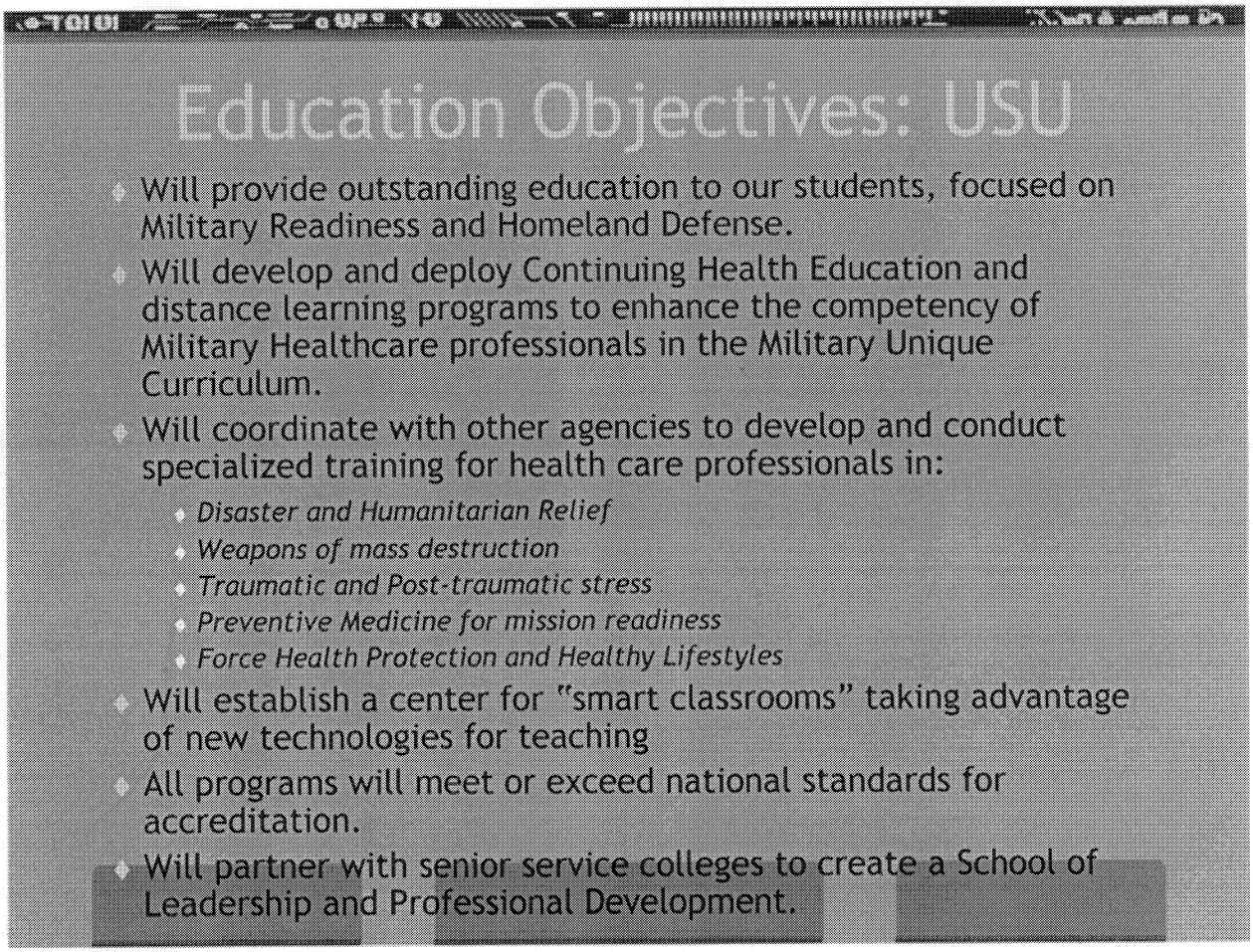
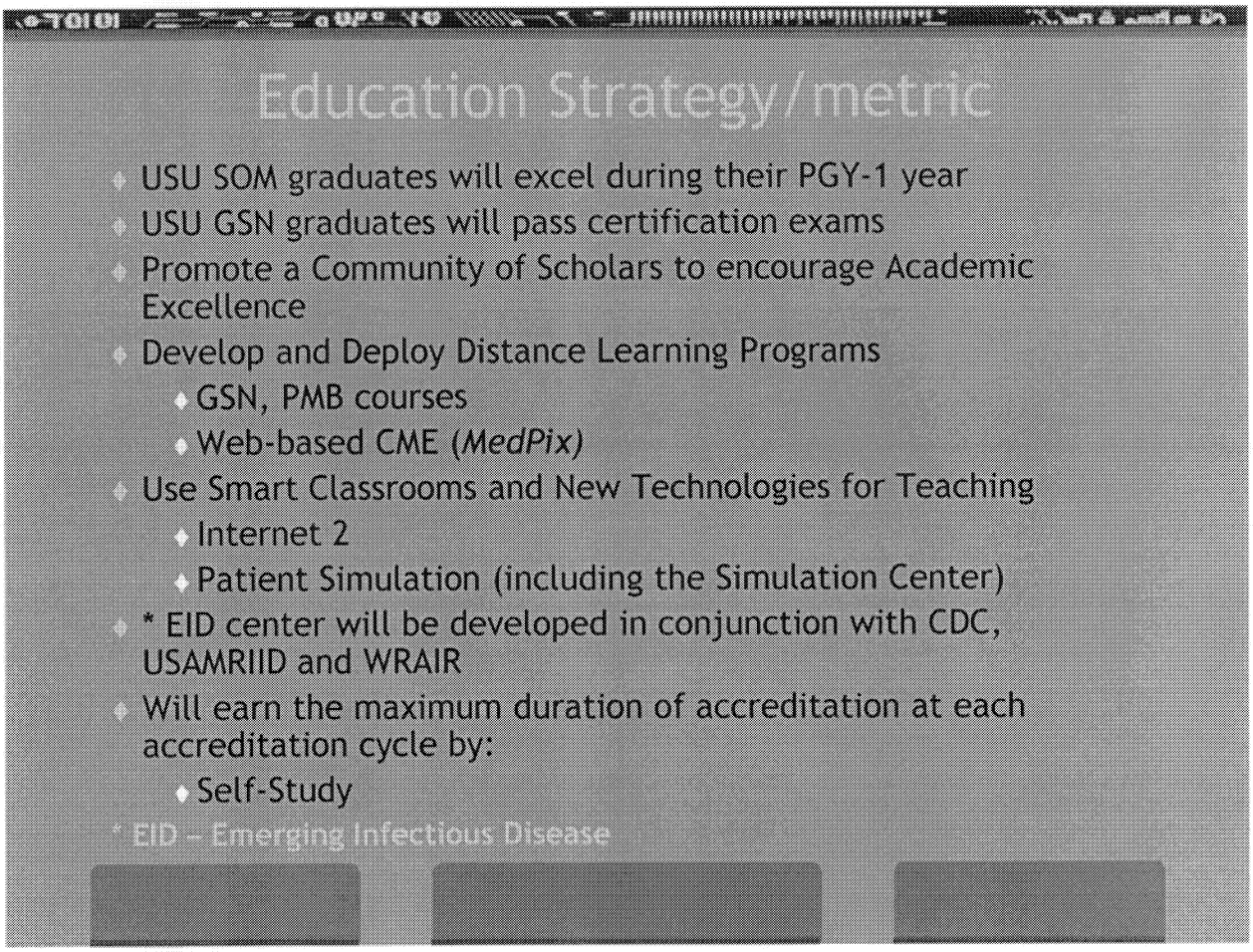
Report of the USU SP Planning Committee
James G. Smirniotopoulos, M.D., Chair

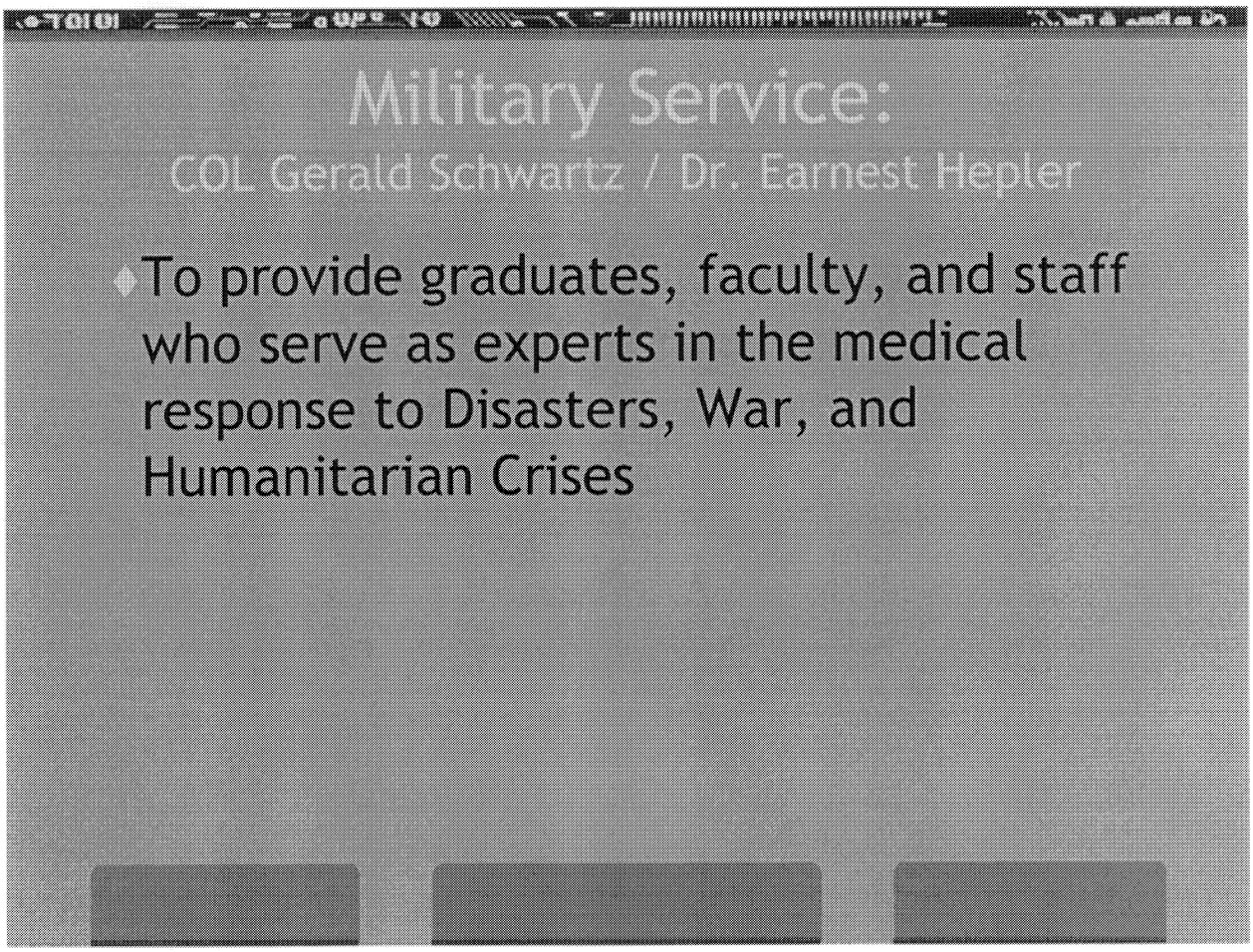

USU SP Website
USU
Strategic Plan- May, 03
References
History
Current Briefing
Mission and Vision
Guiding Principles
A Message f
The University S
the core docum
University is for
accordance with
practices, we h
the Department of Defense Medical Health System (MHS) Business Plan.
In April 2001, the University senior staff, teaching hospital representatives, Chair of the Board of Regents, and representatives of the Surgeons General held a very productive three-day retreat to review our
"Learning to care for those in harm's way"
References for Strategic Planning
Military Health System Strategic Plan •
Army Modernization Plan •
Department of the Navy- Strategic Plan •
Air Force Strategic Plan •

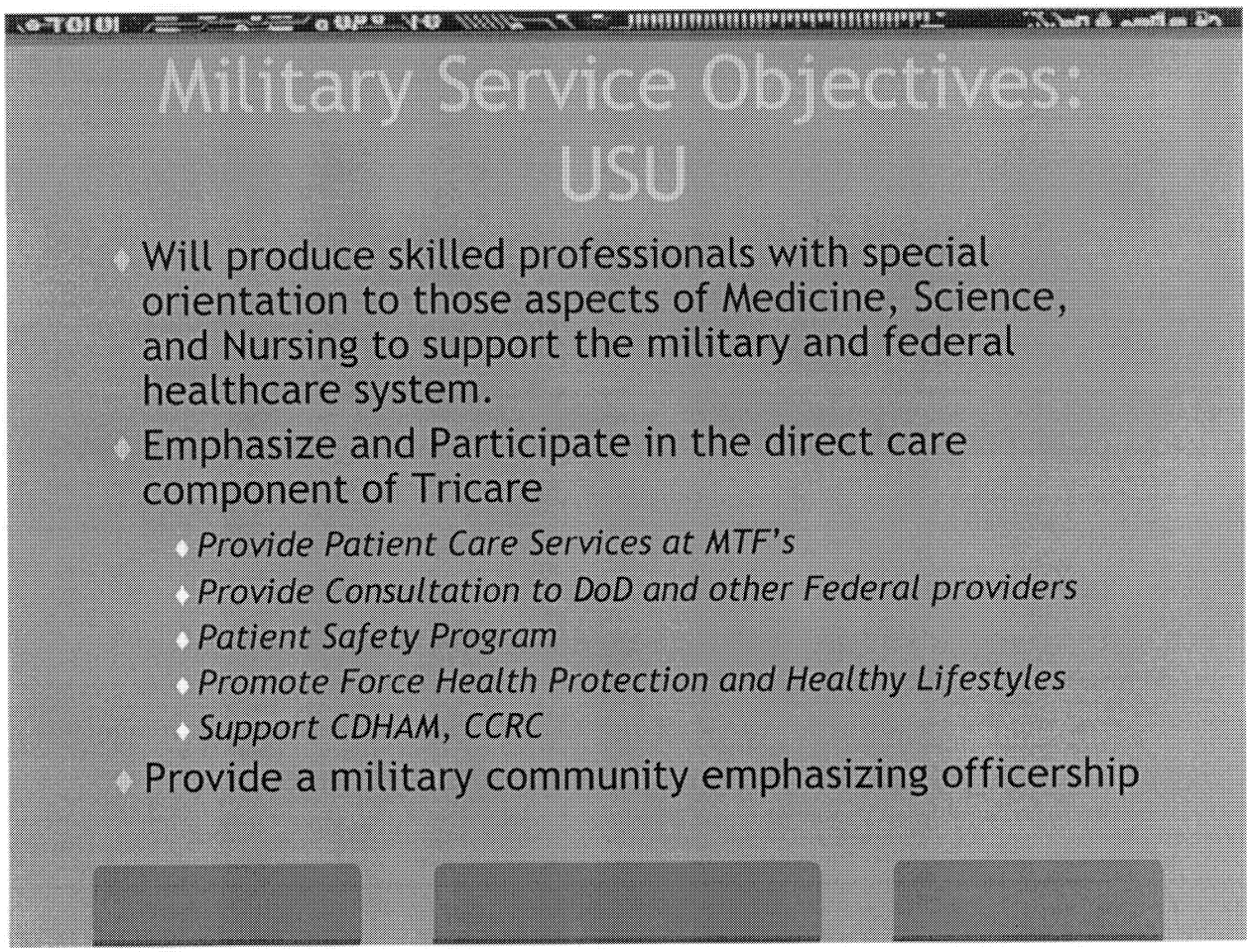

* Five Goals for USU SP
Education
Military service
Research
Leadership
Stewardship
* Co-equal priorities, per Dr. Zimble

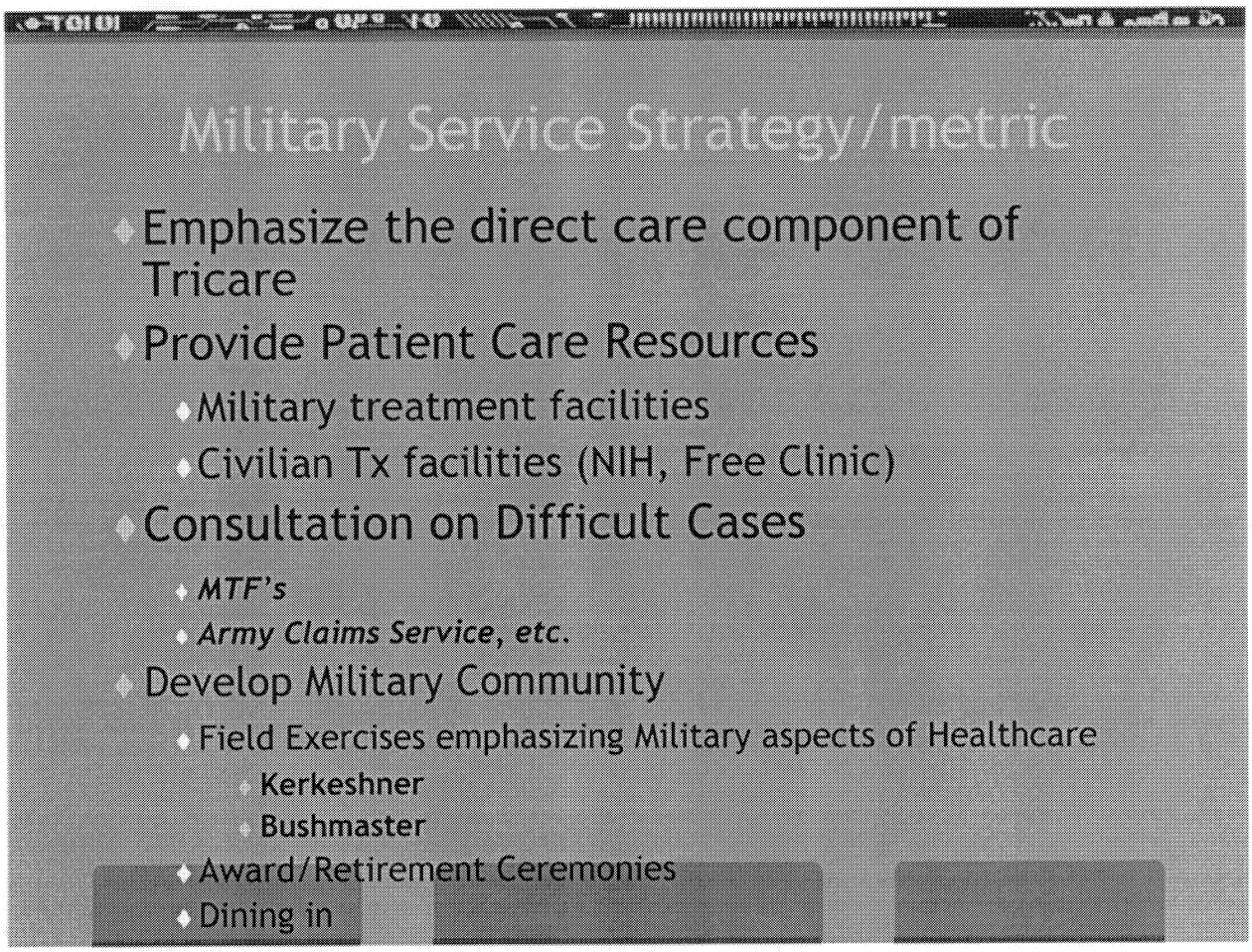

Education
Laughlin/Hinton Walker/Mead
To meet the Nation's needs as the preferred source for uniformed healthcare education and training

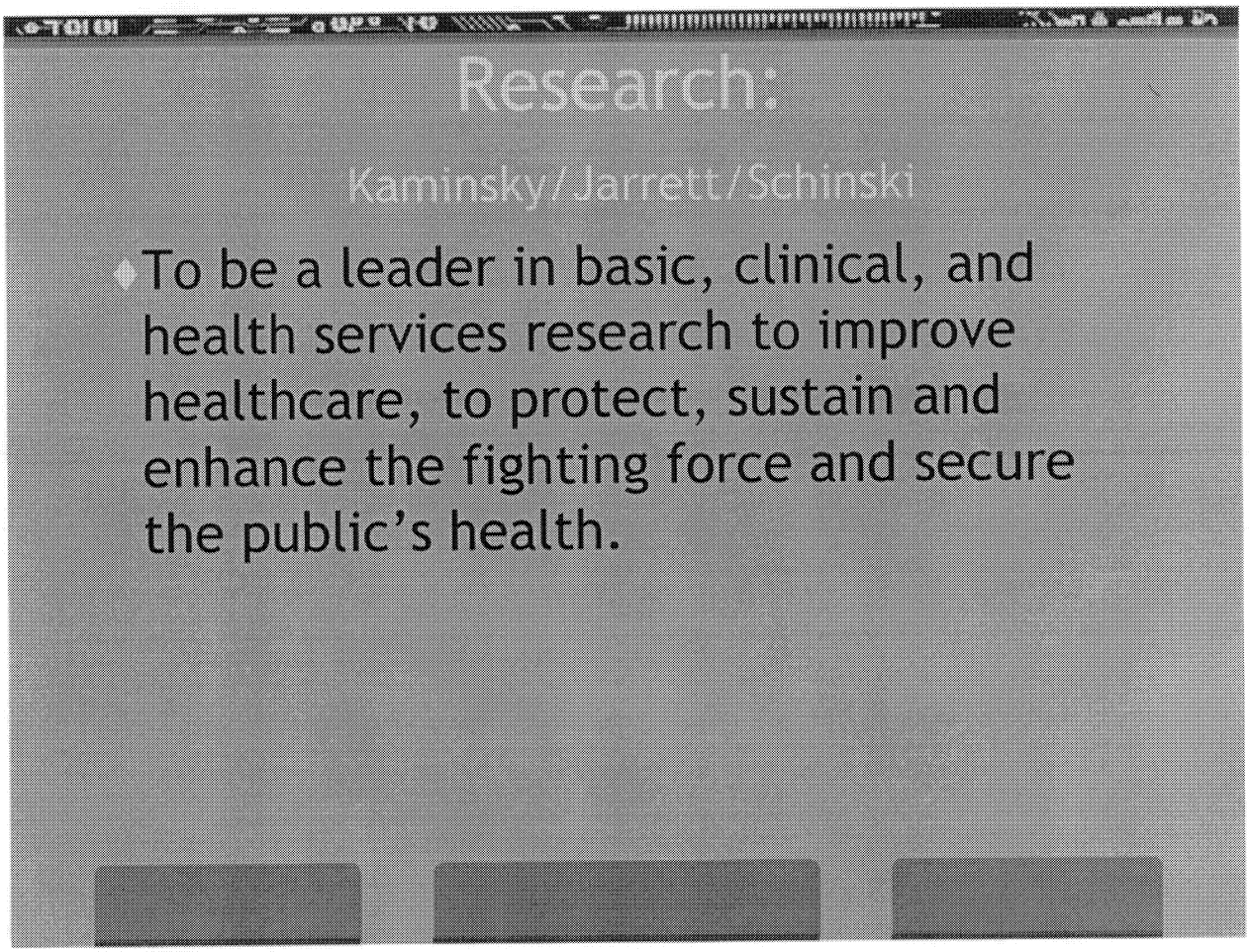

Education Objectives: USU
Will provide outstanding education to our students, focused on Military Readiness and Homeland Defense.
Will develop and deploy Continuing Health Education and distance learning programs to enhance the competency of Military Healthcare professionals in the Military Unique Curriculum.
Will coordinate with other agencies to develop and conduct specialized training for health care professionals in:
Disaster and Humanitarian Relief
Weapons of mass destruction
Traumatic and Post-traumatic stress
Preventive Medicine for mission readiness
Force Health Protection and Healthy Lifestyles
Will establish a center for "smart classrooms" taking advantage of new technologies for teaching
All programs will meet or exceed national standards for accreditation.
Will partner with senior service colleges to create a School of Leadership and Professional Development.


Education Strategy/metric
USU SOM graduates will excel during their PGY-1 year
USU GSN graduates will pass certification exams
Promote a Community of Scholars to encourage Academic Excellence
Develop and Deploy Distance Learning Programs
GSN, PMB courses
Web-based CME (MedPix)
Use Smart Classrooms and New Technologies for Teaching
Internet 2
Patient Simulation (including the Simulation Center)
* EID center will be developed in conjunction with CDC, USAMRIID and WRAIR
Will earn the maximum duration of accreditation at each accreditation cycle by:
Self-Study
* EID – Emerging Infectious Disease

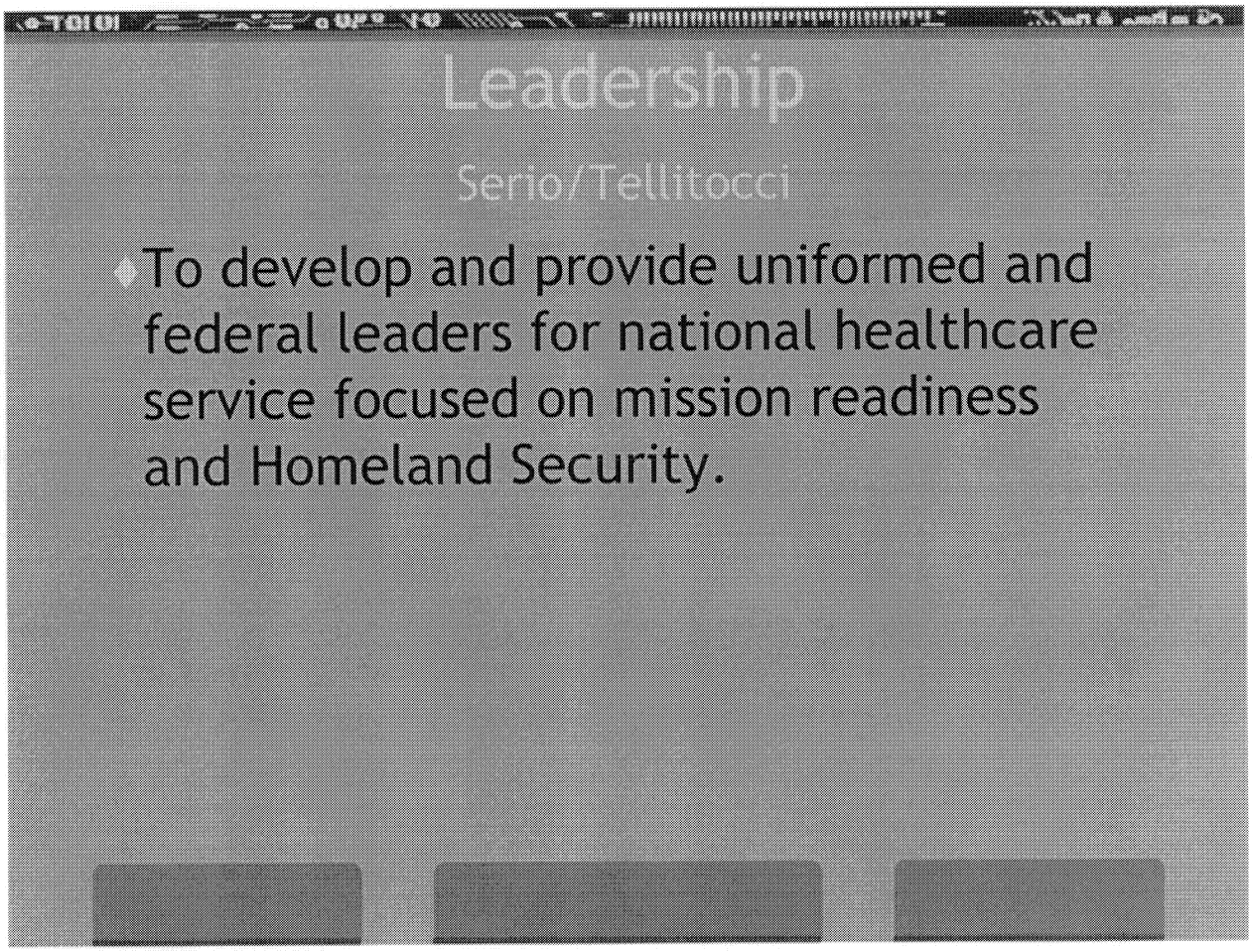

Military Service:
COL Gerald Schwartz / Dr. Earnest Hepler
To provide graduates, faculty, and staff who serve as experts in the medical response to Disasters, War, and Humanitarian Crises

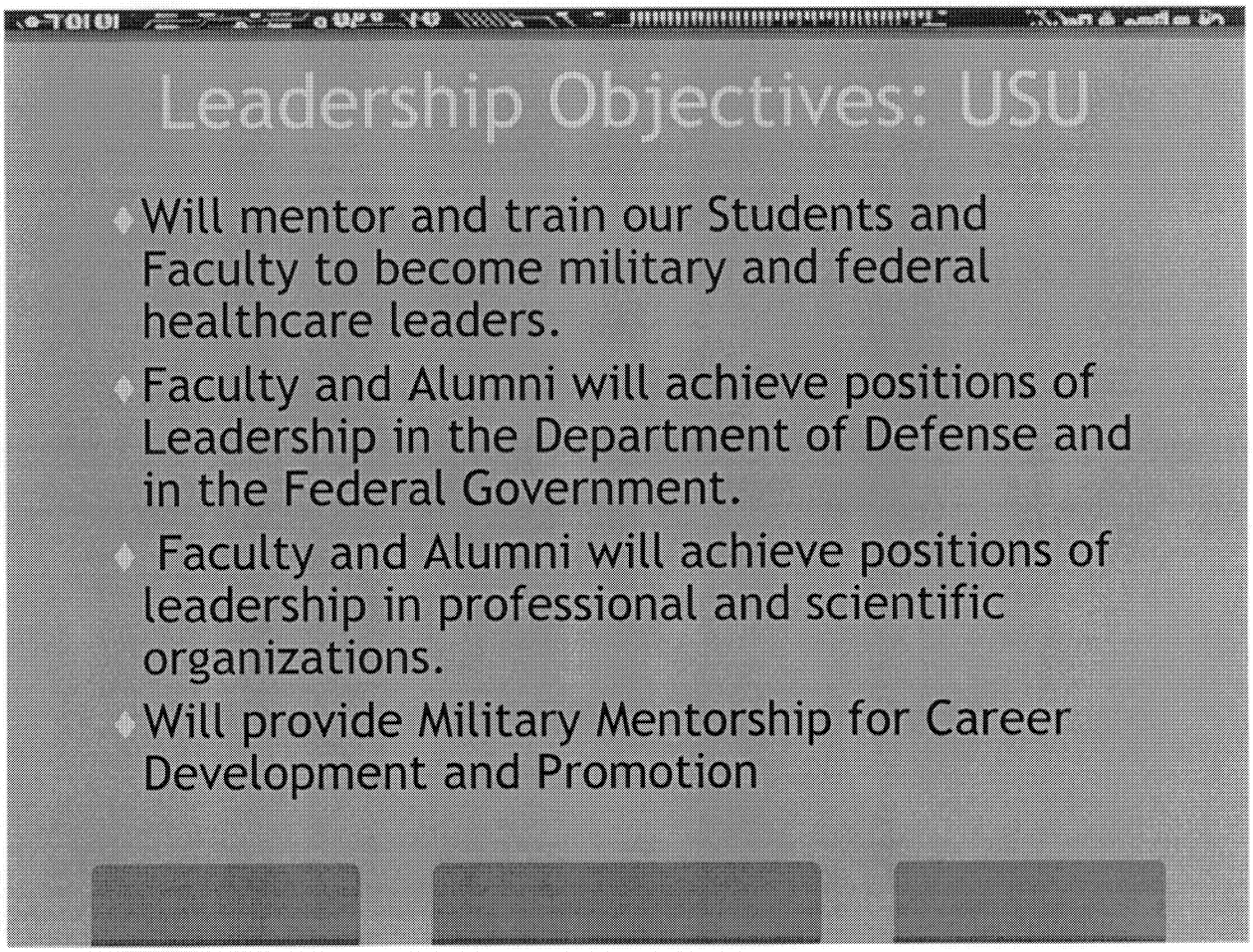

Military Service Objectives: USU
Will produce skilled professionals with special orientation to those aspects of Medicine, Science, and Nursing to support the military and federal healthcare system.
Emphasize and Participate in the direct care component of Tricare
Provide Patient Care Services at MTF's
Provide Consultation to DoD and other Federal providers
Patient Safety Program
Promote Force Health Protection and Healthy Lifestyles
Support CDHAM, CCRC
Provide a military community emphasizing officership

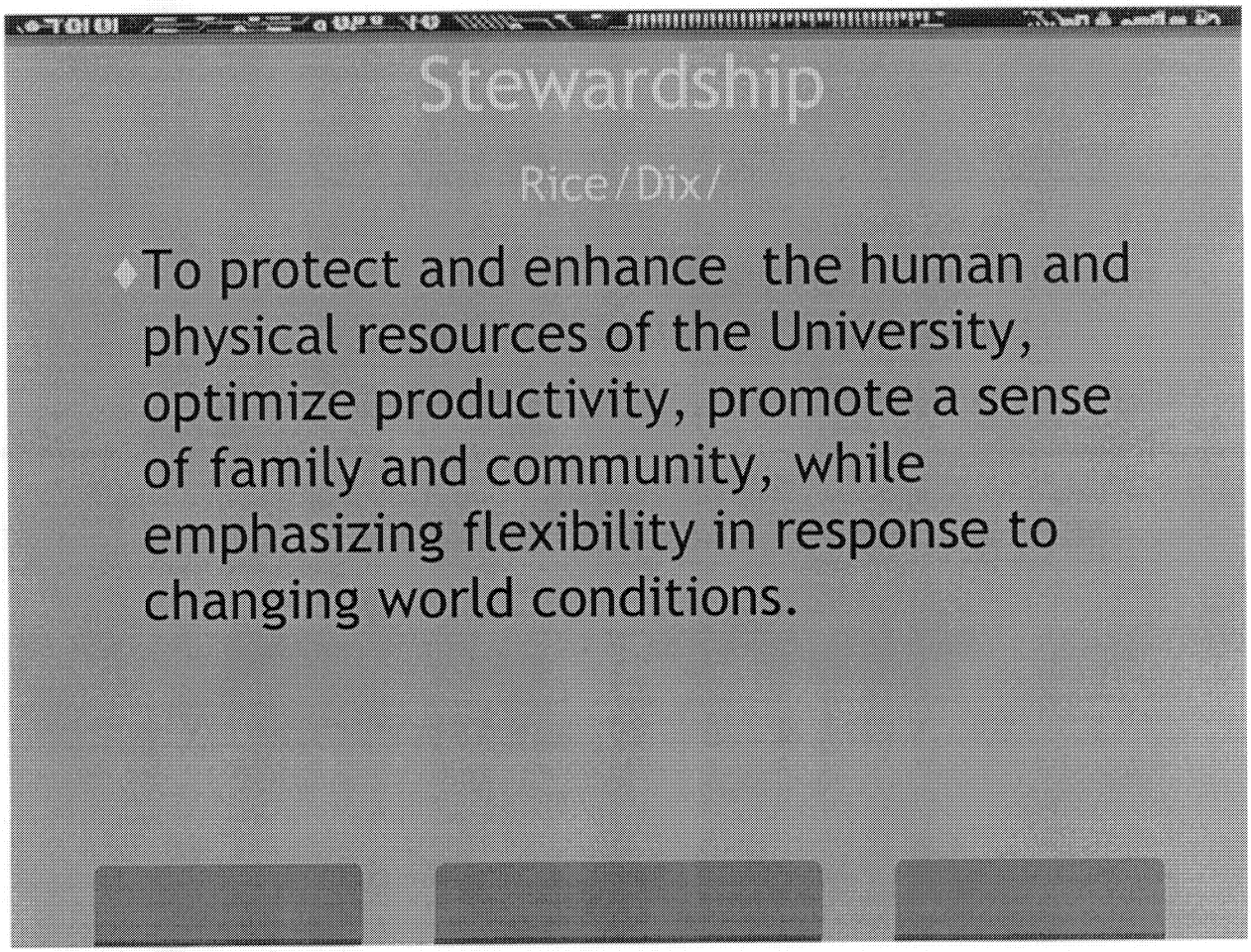

Military Service Strategy/metric
Emphasize the direct care component of Tricare
Provide Patient Care Resources
Military treatment facilities
Civilian Tx facilities (NIH, Free Clinic)
Consultation on Difficult Cases
MTF's
Army Claims Service, etc.
Develop Military Community
Field Exercises emphasizing Military aspects of Healthcare
Kerkeshner
Bushmaster
Award/Retirement Ceremonies
Dining in

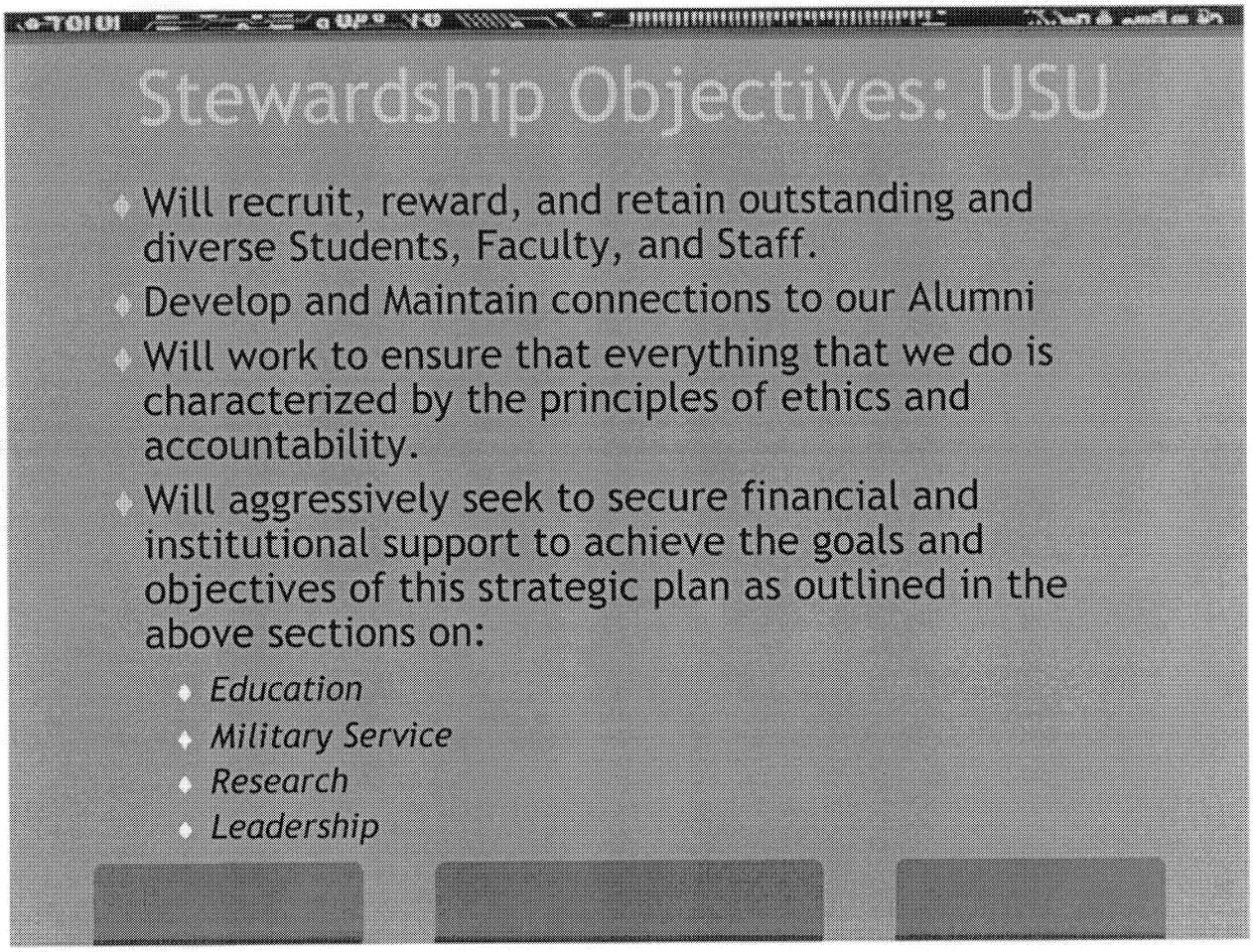

Research:
Kaminsky/Jarrett/Schinski
To be a leader in basic, clinical, and health services research to improve healthcare, to protect, sustain and enhance the fighting force and secure the public's health.

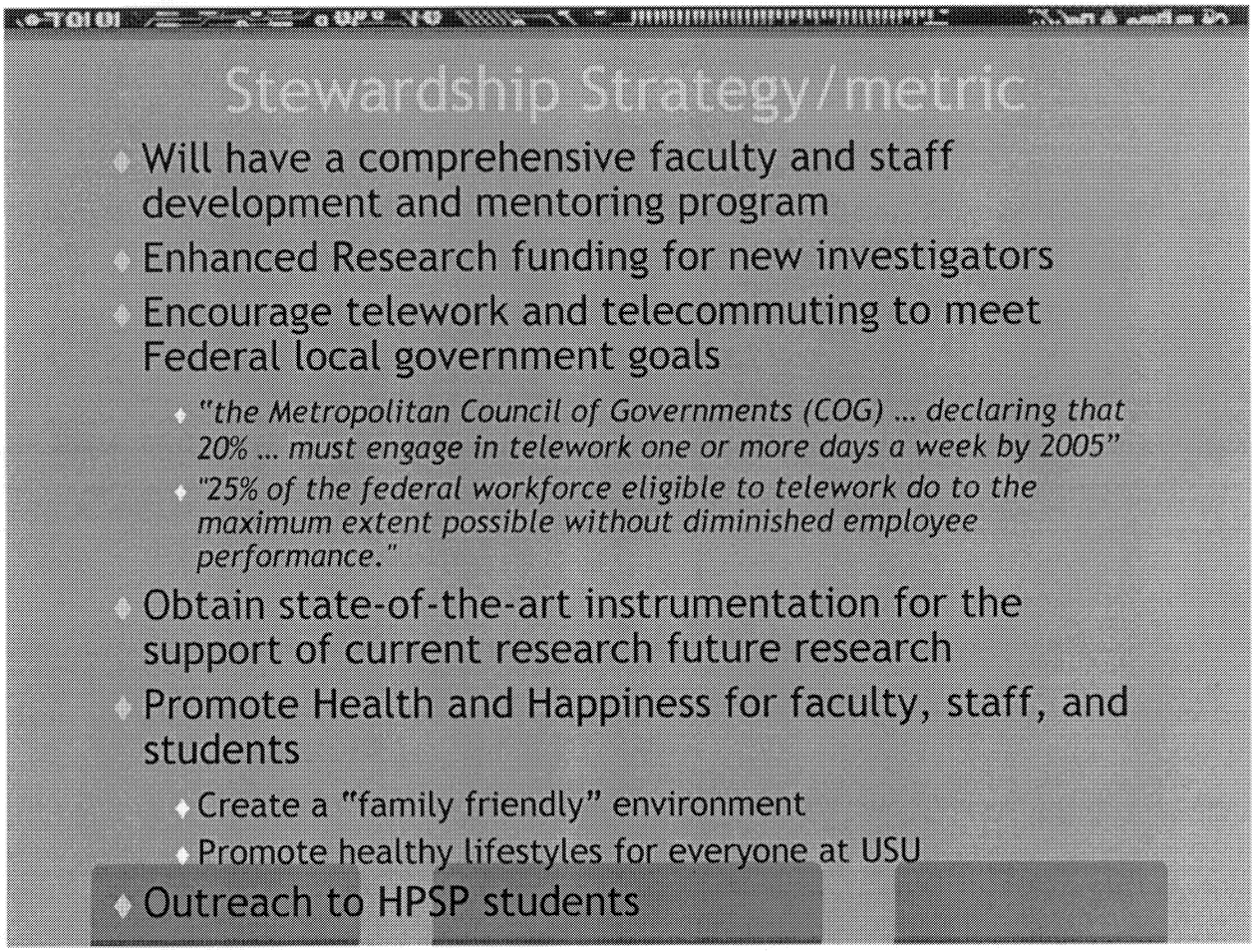

Research Objectives: USU
• Will emphasize Research and Development relevant to military, federal, and homeland security needs.
• Will develop interdisciplinary programs focused on outcomes research.
• Will develop programs for Pedagogical research.
• Will develop a repository for collecting and analyzing combat casualty data.
• Will emphasize research objectives established by service and Joint Service medical requirement documents.
• Will ensure regulatory compliance in all aspects of healthcare and basic science research.
• Will develop Institutional Research for self study

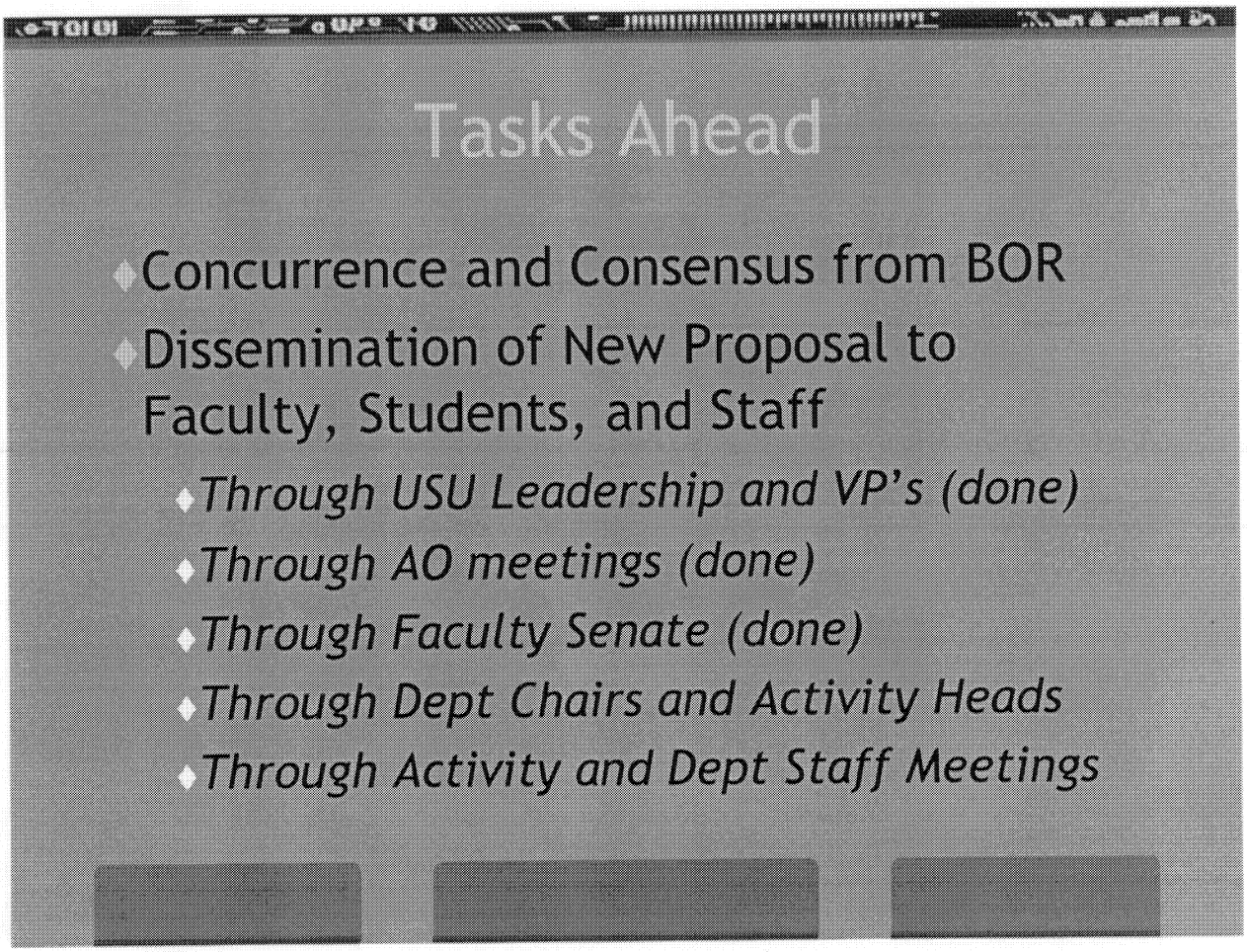

Leadership
Serio/Tellitocci
To develop and provide uniformed and federal leaders for national healthcare service focused on mission readiness and Homeland Security.

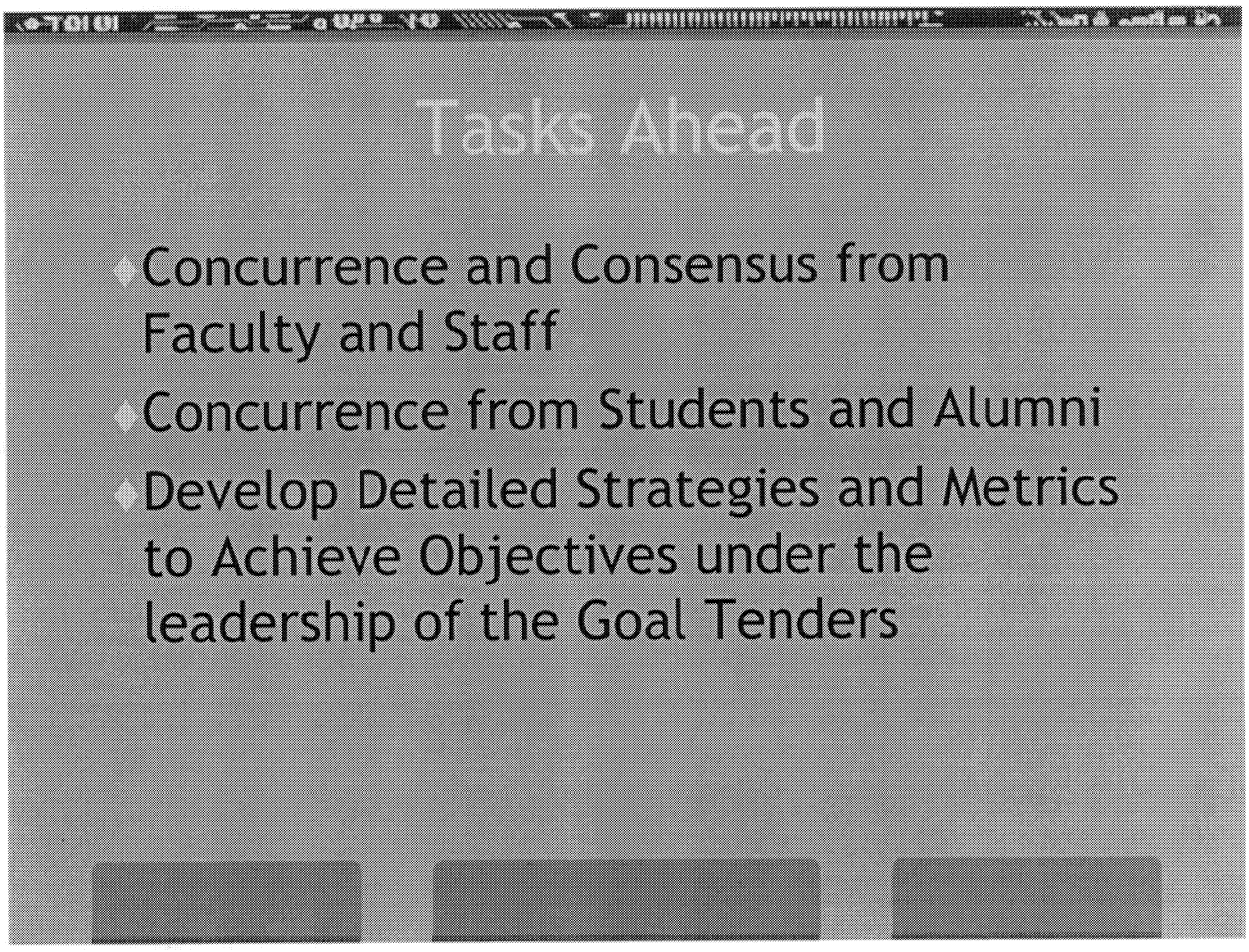

Leadership Objectives: USU
Will mentor and train our Students and Faculty to become military and federal healthcare leaders.
Faculty and Alumni will achieve positions of Leadership in the Department of Defense and in the Federal Government.
Faculty and Alumni will achieve positions of leadership in professional and scientific organizations.
Will provide Military Mentorship for Career Development and Promotion

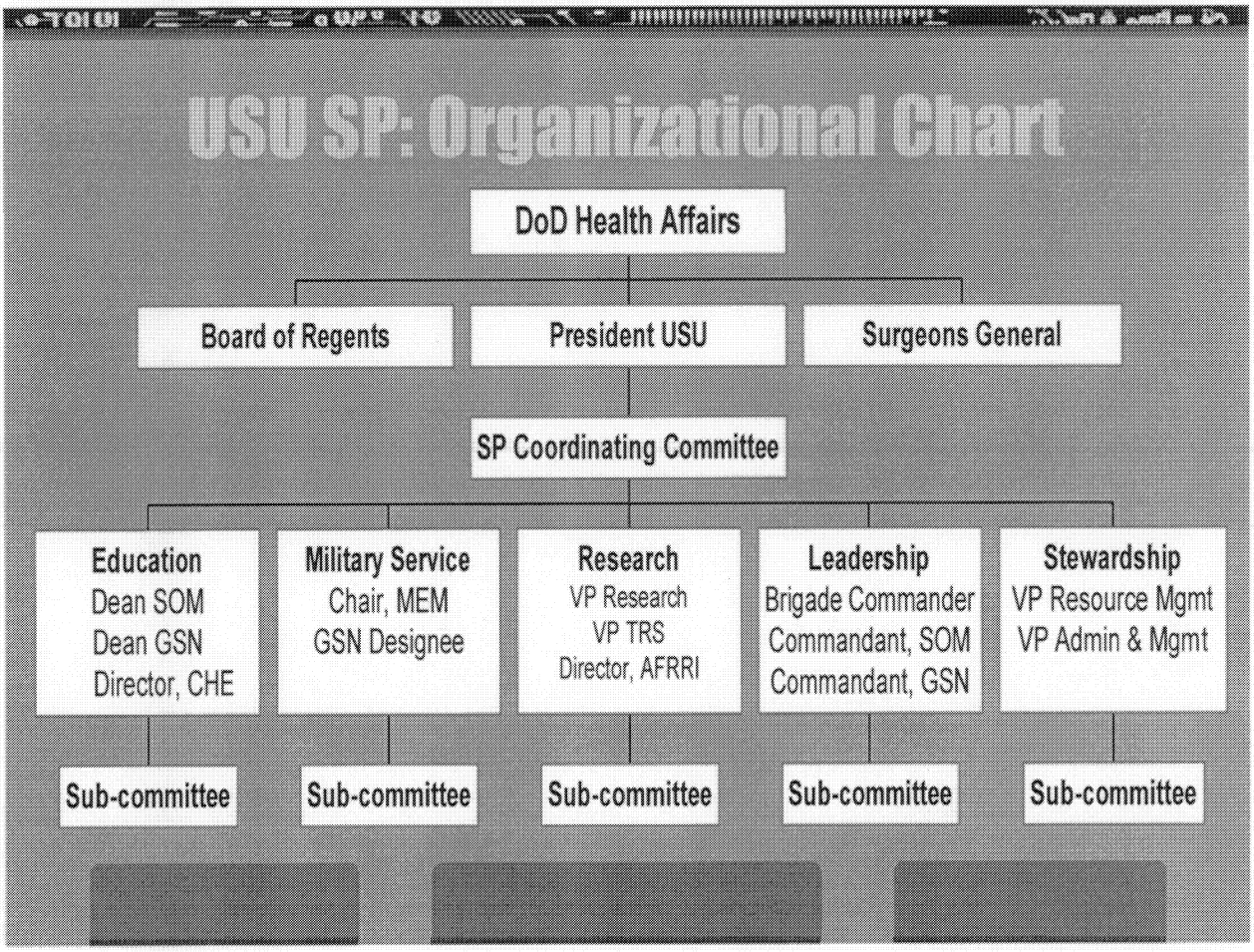

Stewardship
/Rice/Dix/
To protect and enhance the human and physical resources of the University, optimize productivity, promote a sense of family and community, while emphasizing flexibility in response to changing world conditions.

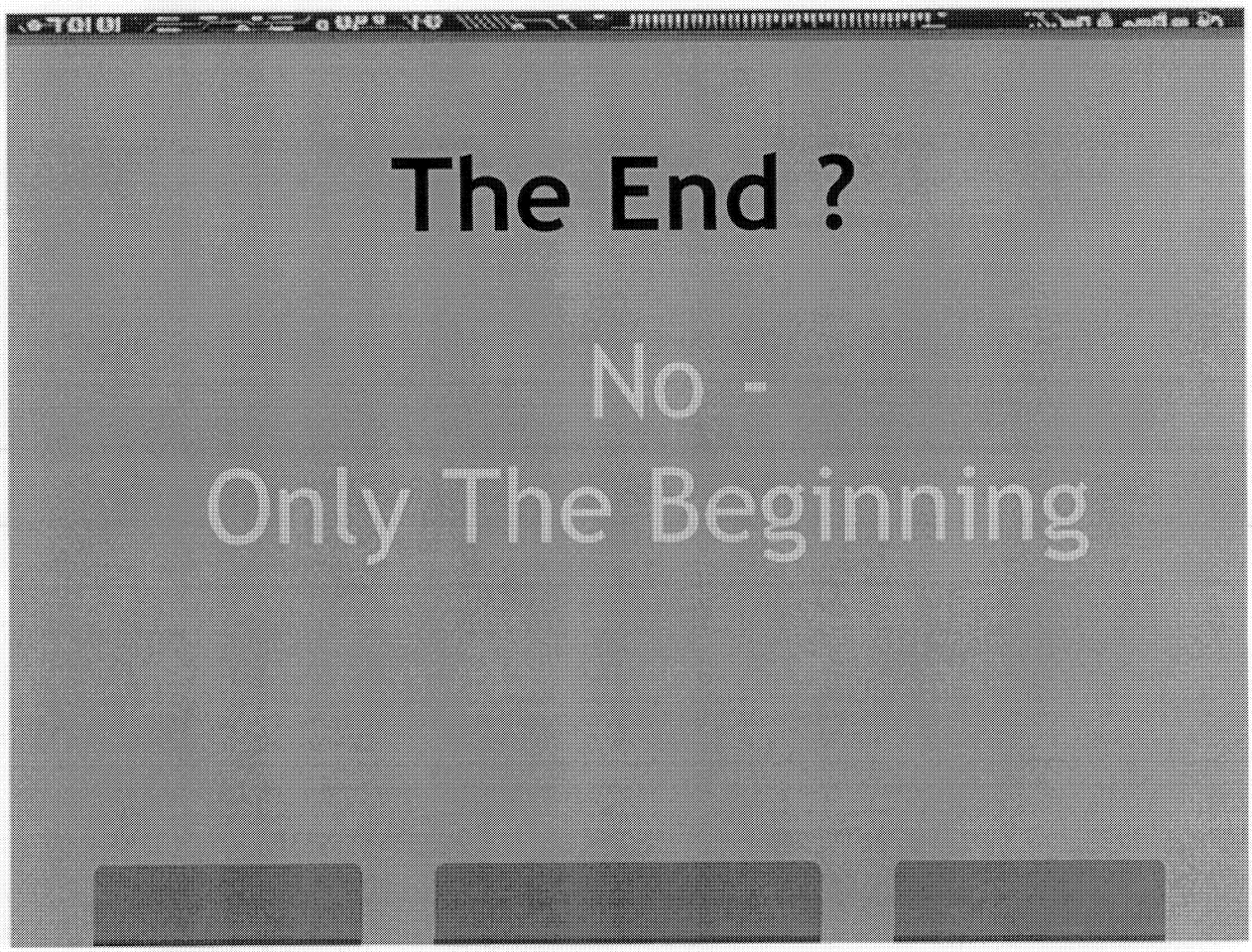

Stewardship Objectives: USU
Will recruit, reward, and retain outstanding and diverse Students, Faculty, and Staff.
Develop and Maintain connections to our Alumni
Will work to ensure that everything that we do is characterized by the principles of ethics and accountability.
Will aggressively seek to secure financial and institutional support to achieve the goals and objectives of this strategic plan as outlined in the above sections on:
Education
Military Service
Research
Leadership

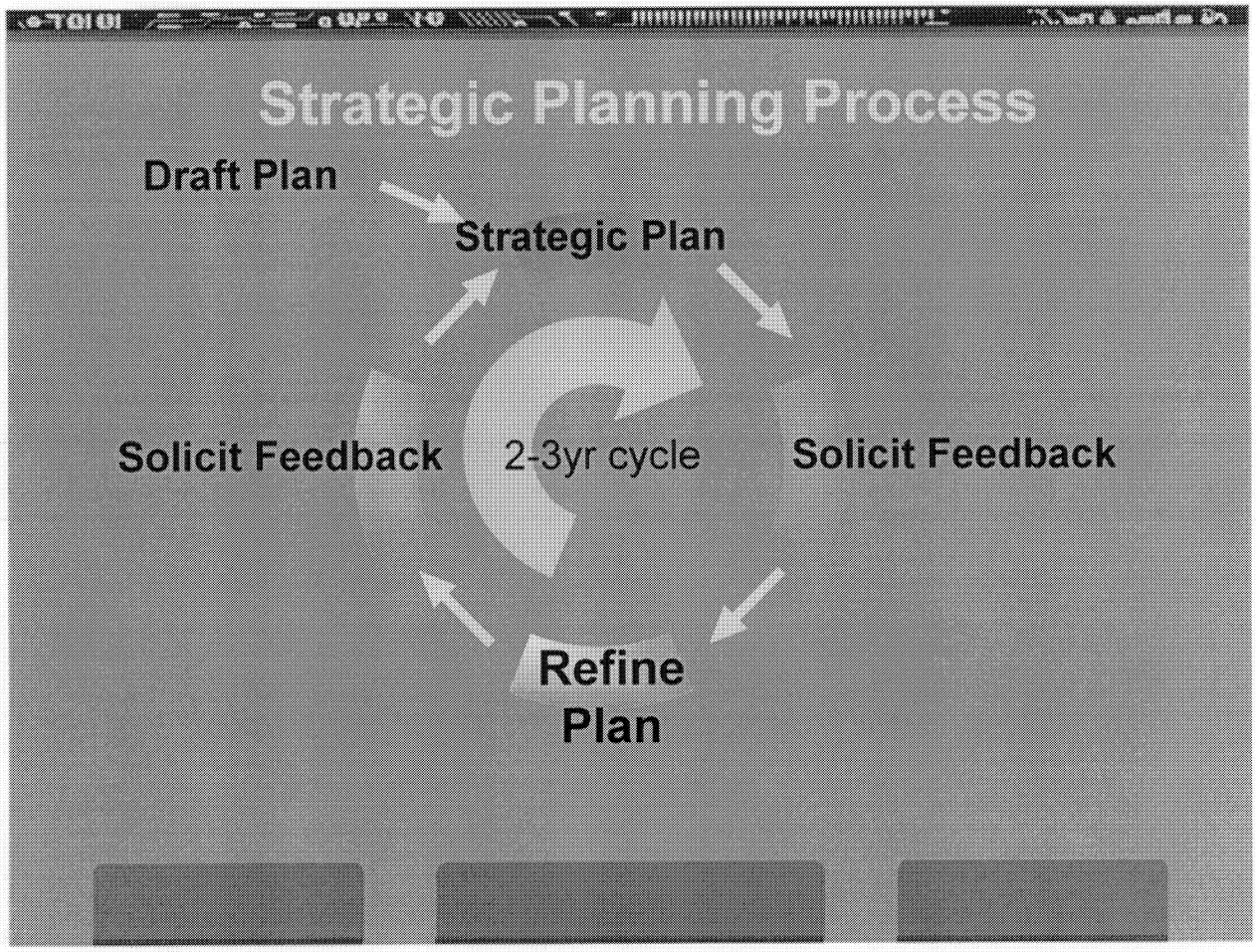

Stewardship Strategy/metric
Will have a comprehensive faculty and staff development and mentoring program
Enhanced Research funding for new investigators
Encourage telework and telecommuting to meet Federal local government goals
"the Metropolitan Council of Governments (COG) ... declaring that 20% ... must engage in telework one or more days a week by 2005"
"25% of the federal workforce eligible to telework do to the maximum extent possible without diminished employee performance."
Obtain state-of-the-art instrumentation for the support of current research future research
Promote Health and Happiness for faculty, staff, and students
Create a "family friendly" environment
Promote healthy lifestyles for everyone at USU
Outreach to HPSP students

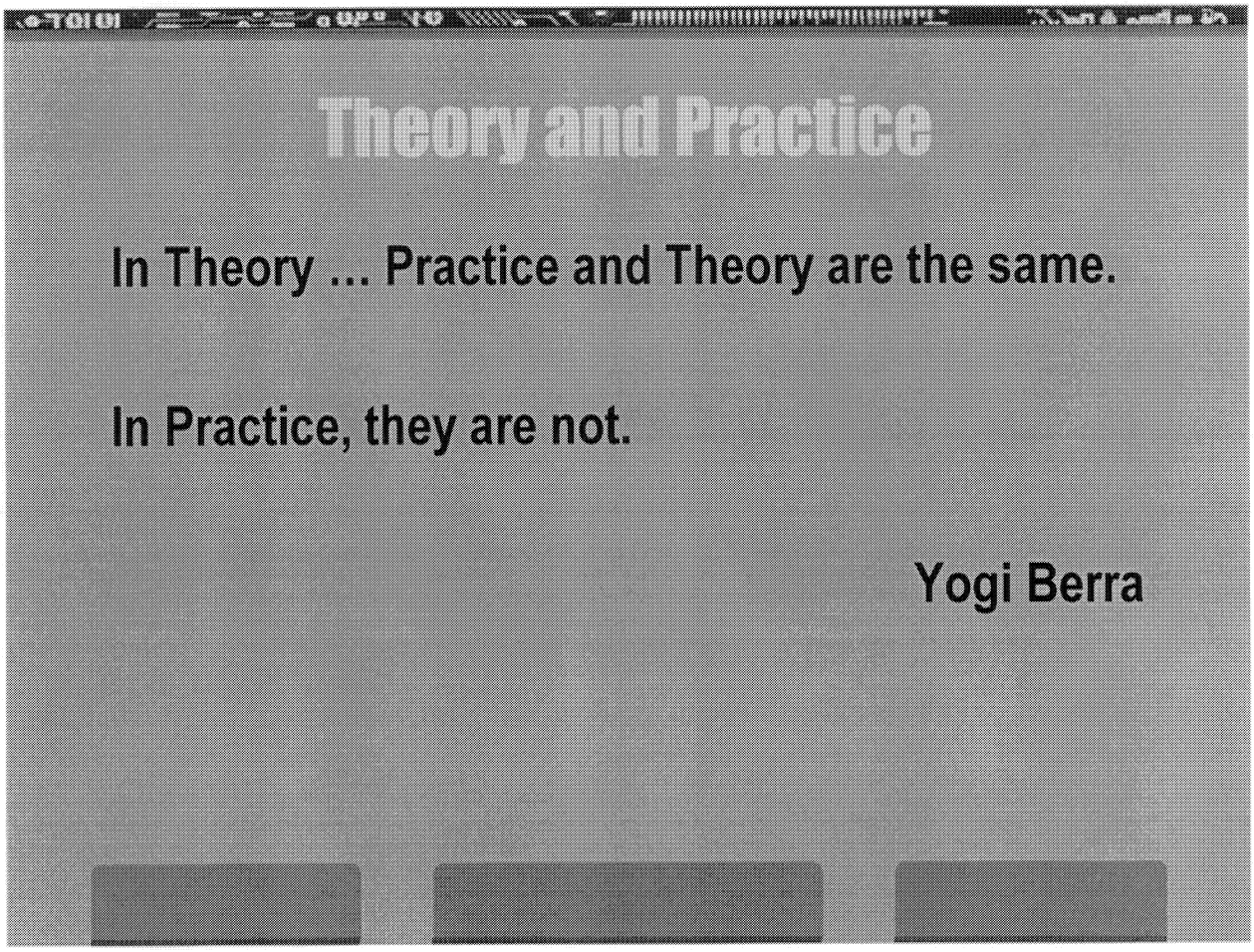

Tasks Ahead
Concurrence and Consensus from BOR
Dissemination of New Proposal to Faculty, Students, and Staff
Through USU Leadership and VP's (done)
Through AO meetings (done)
Through Faculty Senate (done)
Through Dept Chairs and Activity Heads
Through Activity and Dept Staff Meetings


Tasks Ahead
Concurrence and Consensus from Faculty and Staff
Concurrence from Students and Alumni
Develop Detailed Strategies and Metrics to Achieve Objectives under the leadership of the Goal Tenders


USU SP: Organizational Chart
DoD Health Affairs
Board of Regents
President USU
Surgeons General
SP Coordinating Committee
Education
Dean SOM
Dean GSN
Director, CHE
Military Service
Chair, MEM
GSN Designee
Research
VP Research
VP TRS
Director, AFRRI
Leadership
Brigade Commander
Commandant, SOM
Commandant, GSN
Stewardship
VP Resource Mgmt
VP Admin & Mgmt
Sub-committee
Sub-committee
Sub-committee
Sub-committee
Sub-committee


The End ?
No -
Only The Beginning


Strategic Planning Process
Draft Plan
Strategic Plan
Solicit Feedback
2-3yr cycle
Solicit Feedback
Refine Plan


Theory and Practice
In Theory … Practice and Theory are the same.
In Practice, they are not.
Yogi Berra

APPENDIX C

Selected Examples of Billeted and Off-Campus Members of the USU Departments, Programs and Activities Receiving Special Recognition - 2004/5.

Anatomy, Physiology and Genetics - School of Medicine.

Department Overview. A significant change took place over the past five years in the academic structure of the USU SOM. The Department of Anatomy and Cell Biology and the Department of Physiology were formally merged to create the Department of Anatomy, Physiology and Genetics (APG). The philosophy of the newly formed department conforms with the mission and goals of the USU Strategic Plan; it is based upon a commitment to the highest level of excellence in teaching, research, and administration. The departmental merger has consolidated the teaching, research, and administrative functions of a substantial component of the University within a single faculty group under the leadership of a single Department Chair. Integration of the formerly separate anatomy and physiology curricula is resulting in a comprehensive, cohesive and dynamic educational experience that spans the entire first year medical education. As expected, the departmental merger is yielding benefits beyond the immediate outcomes of curriculum integration.

A Focus on Understanding Tissue and Organ Function within a Clinically Relevant Context. The faculty of APG provide the Nation's next generation of physicians with a comprehensible, intellectually interesting, and integrated curriculum for understanding tissue and organ function within a clinically relevant context. The goal of APG is to integrate the information explosion resulting from the Human Genome Initiative and a myriad of cellular and molecular biological approaches, so that biomedicine explains how the human body functions as an integrated self-regulating system. The systems biology approach is seen as a means to further improve the information transfer process for the major responsibility of APG - the education of USU medical and graduate students. The Basic Anatomy and Physiology Courses have been integrated and are providing students with a comprehensive understanding of tissue and organ function. The APG faculty members oversee courses that extend for the entire first academic year; in fact, first-year medical students spend approximately 53 percent of their first year of medical education with APG faculty. APG has organized its basic instruction into three modules. ***Introduction to Structure and Function*** introduces the student to cell classification, organelle function, and cellular processes, followed by study of the gross anatomy of the human body. An emphasis is placed upon understanding anatomical relationships and the causes and functional consequences of anomalies arising from disease processes. Gross anatomical study of the head and neck region, neuroanatomy, and basic clinical neurology are taught in the second module, ***Clinical Head and Neck and Functional Neuroscience***. Clinical cases are presented and case studies are assigned to students to reinforce their understanding of neurological function. Then, the students return to cellular and subcellular analysis in the third module, ***Structure and Function of Organ Systems***. This module presents an integrated approach to the functions of different cells and organ systems, which include: the functions of muscle; heart; endocrine systems; kidney; respiration; gastrointestinal physiology; hematology; and, reproduction. Again, basic principles are emphasized to underscore clinical relevance.

Recognition of Faculty and Educational Programs. The educational programs of APG are overwhelmingly lauded by medical and graduate students. Its faculty are recipients of many awards,

including the SOM's ***Outstanding Civilian Educator Award***, the ***Class of 2007 Well Beyond the Call of Duty Award***, and three separate awards for excellence in medical education: ***Outstanding Instructor***; ***Student Advocate***; and, ***Best Use of Medical Technology Awards***. During 2004, the medical students hosted ***Operation Appreciation***, during which, APG courses received *Best Overall Course*, *Best Course Supplemental Materials*, and *Outstanding Class Notes*. All seven individual awards were presented to APG faculty members.

Collaborative Activities. In addition to faculty participation in graduate courses offered by the various Doctoral Programs of USU, APG faculty members, in a collaborative project with the National Naval Medical Center (NNMC) Department of Anesthesiology and the USU SOM Department of Anesthesiology, operate the Patient Simulation Laboratory (PSL). Since its inception in 1997, the PSL has created and presented patient simulation-based clinical education for USU students, as well as, for clinicians from local military treatment facilities. To extend the reach of simulation-based education, the PSL supports an ultra-high speed *Internet2* Advanced Distance Education Network, throughout USU, with links to the NNMC and the National Library of Medicine. APG faculty are also active members of two USU interdisciplinary programs: the Molecular and Cell Biology and the Neuroscience Graduate Education Programs. Many graduate students in these programs are undertaking their thesis research in APG laboratories.

Research Activities. True to the view that bench research leads to new breakthroughs for conquering disease and illness, APG faculty direct substantive medical research programs related to military medicine. This newly integrated Department offers a wide range of varied and collaborative research programs, which employ anatomical, electrophysiological, biochemical, cellular and molecular biological methods to address medical problems associated with neurodegenerative disorders such as: Multiple Sclerosis; Parkinson's Disease; Alzheimer's Disease; Down Syndrome; Canavan Disease; traumatic brain injury; stroke; hemorrhagic shock; and, peripheral nerve injury. Faculty members also have active research programs in hypertension and cardiovascular pathophysiology, neuroimmune responses of gastrointestinal function, and understanding metabolic disorders such as Cystic Fibrosis and Diabetes. Studies within the Department focus on: the regulation of neuronal gene expression; neuroendocrine secretory processes; the role of glial cells in CNS injury and disease; and, neuronal regeneration and plasticity. Several programs employ state-of-the-art approaches, to include: cell therapy using engineered cells; gene therapy using viral and chemical vectors; knock-out and transgenic mouse models; microarray; mass spectrometry; and, genomic and proteomic technologies. The Department's research funding is supported by the National Institutes of Health, the National Science Foundation, the TriService Nursing Research Program, the Alzheimer's Association, the Juvenile Diabetes Foundation, the Cystic Fibrosis Foundation, Foundation Jerome Lejeune, the Maryland State Board of Spinal Cord Research, the Department of Defense/Veterans Head Injury Program, as well as, the USU Intramural Grants Program. ***The total amount of research funding, in 2004, for APG exceeded $5.9 million***.

APG Faculty Members Receive Continuous Funding from the National Institutes of Health. One measure of the success of the USU Research Programs and individual investigators is the length of time for which a researcher has held continuous funding for a given project. A number of University faculty hold grants funded by the National Institutes of Health (NIH) for at least five years. The following individuals from APG hold single grants with continuous NIH funding from five to eighteen years: **Regina C. Armstrong, Ph.D., Professor, USU SOM Department of APG** (5 years); **Harvey B. Pollard, M.D., Ph.D., Professor and Chair, USU SOM Department of APG** (six years); and, **Sharon L. Juliano, Ph.D., Professor USU SOM Department of APG** (eighteen years).

Individual Contributions.

Harvey B. Pollard, M.D., Ph.D., Professor and Chair, USU SOM Department of APG, established, in 2002, the USU Center for Medical Genomics and Proteomics in the Department of APG**.** By doing so, APG has become one of ten academic organizations in the United States to win substantial support (12.7 million dollars) from the National Institutes of Health (NIH) for the establishment of a Proteomics Center. The NIH contract has allowed the University to acquire a world-class set of mass spectrometers, as well as support personnel, to form the technical basis for proteomic research in the 21st Century. In terms of NIH funding, this moves APG into the ranks of the top twenty equivalent Departments in United States Medical Schools and provides a crucial research resource to the entire University; USU researchers all benefit from this valuable asset, as well as USU as an institution. The focus of the Center is on lung disease, with a special focus on the inflammatory flagship genetic disease of cystic fibrosis. One citizen in 20 carries one copy of the mutant gene for cystic fibrosis; and, it is the most common autosomal recessive fatal disease, in the United States. Information derived from the Center promises to impact on our understanding of more challenging, but less understood, inflammatory diseases of the lung such as asthma, and inflammatory processes in other parts of the body.

Doctor Pollard was awarded a grant of nearly $500,000 from the Cystic Fibrosis Foundation to use his method of analysis (*conducting high throughput screening - genomic analysis to determine which genes are corrected by the drug; and proteomic analysis to see how changes in the gene correspond to protein changes at the cellular level*) to find drugs that would reduce inflammatory signals and potentially correct trafficking of defective Cystic Fibrosis Transmembrane conductance Regulator (CFTR) proteins. The Center's research team includes 20 faculty members and other scientists. The principal investigators from the Department of APG include: **Gregory P. Mueller, Ph.D., Professor; Meera Srivastava, Ph.D., Research Professor;** and, **Nelson J. Arispe, Ph.D., Research Professor**. The drugs that the Center's team are studying are those that suppress signaling pathways, especially involved in inflammation, among them Digitoxin. Dr. Pollard recently published an article in the *Proceedings of the National Academy of Science* on his discovery that Digitoxin, which was previously used in cases of heart failure and is no longer in production in the United States, was effective in reducing Cystic Fibrosis-related inflammatory responses. He hopes to be granted permission by the Food and Drug Administration to import Digitoxin from Europe for clinical trials. The team has also discovered, based on their work at USU, two additional drugs ready for clinical trials that may yield promising results for Cystic Fibrosis patients.

Mark R. Adelman, Ph.D., Associate Professor, USU SOM Department of APG, is a Course Director of ***Anatomy Block I: Introduction to Structure and Function***, and an instructor in ***Structure and Function of Organ Systems***. He has a long-standing interest in the motility and structure of the acellular slime mold, *Physarum Polycephalum*. Ongoing work is directed at two specific phenomena: 1) What factors regulate the assembly and disassembly of actin microfilaments during the oscillatory protoplasmic streaming seen in the plasmodia? and, 2) What factors determine the assembly and disassembly of actin-based and tubulin-based structures as the amoeboid gametes transform into flagellate swarm cells in response to various external signals?

Denes Agoston, M.D., Ph.D., D.Sc., Associate Professor, USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function***, and ***Structure and Function of Organ Systems***. *His laboratory has been using the enkephalin gene and the enkephalinergic system as a model of brain function. Enkephalins are neuropeptides that mediate reward*

and behavioral motivation and abnormal enkephalinergic system activity that has been associated with altered behavior and substance abuse. Enkephalins are also involved in regulating immunoresponse in the injured brain. Identifying molecular and cellular components that regulate enkephalin expression in embryonic neurons will aid the understanding of neuronal regeneration in the injured brain.

Juanita J. Anders, Ph.D., Associate Professor, and **Kimberly Byrnes, Ph.D., USU SOM Department of APG, President of the North American Association for Laser Therapy.** Light of specific wavelengths can penetrate to different depths of the body. Through its absorption by a cellular photoreceptor, light can modulate basic cellular functions including energy (ATP) production and DNA, RNA, and protein synthesis. Therefore, light has the potential to serve as a non-invasive therapy for deep tissue repair. Doctors Anders and Byrnes demonstrated that light could increase neuronal survival and regeneration in the injured peripheral nervous system. This work led to a series of experiments on the use of light as a non-invasive treatment for spinal cord injury (SCI). In the United States, approximately 230,000 individuals live with the effects of SCI; and, this number increases by 11,000 each year. SCI causes devastating disabilities due to the inability of axons, within the central nervous system, to regenerate following an injury. While advances in emergency care and rehabilitation allow many SCI patients to survive, methods for reducing the extent of injury and for restoring function are still limited. Doctors Anders and Byrnes, in collaboration with Doctors Waynant and Ilev, colleagues from the Food and Drug Administration, identified that 810 nm light could penetrate to the depth of the spinal cord. Light treatment of injured spinal cored with an 810 nm, 150 mW (dosage = 1589 J/cm2) diode laser, acted as an immunosuppressant and improved axonal regeneration and functional recovery. *This research suggested that light treatment is a novel and effective treatment for SCI; and, in 2003, it led to the filing of a Provisional Patent Application and licensing of this technology to PhotoThera, Incorporated. On April 29, 2005, Dr. Anders work was featured in the Baltimore Sun newspaper*. The article pointed out that Dr. Anders, over the past seven years, has been studying the healing powers of low-level lasers; and, that she has found that in rats, laser therapy can repair severed spinal cords, allowing once-injured animals to walk again. Dr. Anders has explained that lasers are worthy of careful study because when the therapy is conducted properly, it can produce amazing results. Dr. Anders is the Assistant Course Director of ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience***.

Regina C. Armstrong, Ph.D., Professor, USU SOM Department of APG, and Director, USU Neuroscience Graduate Education Program, is an instructor in the ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience*** Course. *Dr. Armstrong's current research activities focus on the cellular and molecular mechanisms of glial cell development and regeneration*. During development, one glial cell type, the oligodendrocyte, forms myelin, which ensheathes axons to enable efficient neurotransmission in the central nervous system. Dr. Armstrong has studied the growth factors regulating the proliferation and migration of oligodendrocytes prior to myelin formation. Current experiments also examine the differentiation of precursors of oligodendrocytes into mature oligodendrocytes to identify proteins that bind to DNA and control transcription of genes expressed only in myelin-forming cells. The proliferation, migration, and differentiation of oligodendrocytes are also being studied in adult animals after experimental myelin damage, or demyelination. Dr. Armstrong was awarded a grant in the amount of $609,660 from the National Multiple Sclerosis Society. Dr. Armstrong's research, *Growth Factor Regulation of CNS Remyelination*, will study how to promote recovery of function in the adult human central nervous system by manipulating growth factors to promote the regeneration of oligodendrocytes that go on to repair damaged myelin in the adult rodent. Myelin is a specialized lipid structure that facilitates rapid transmission of nerve impulses along axons (the extensions of neurons that send signals to other neurons and other parts of the body). Dr. Armstrong explains that repair of myelin could lead to the recovery of

functions of axons that remain viable but cannot propagate signals due to damaged myelin. Myelin loss or damage in humans can result from diverse diseases such as multiple sclerosis, as well as, trauma, toxins and infections.

Rosemary C. Borke, Vice Chair for Instruction, Professor, USU SOM Department of APG, is the Course Director of ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience***; and, she has been a perennial favorite of the first-year medical students. She has made on-going improvements such as the inclusion of additional educational materials that stress clinical correlations, demonstrating the importance of a firm grounding in the basic sciences. A recipient of numerous student awards, Dr. Borke recently completed a series of self-study, interactive CDs that the students use to review course material for ***Clinical Head and Neck and Functional Neuroscience***. *Dr. Borke's research interests include plastic responses of motoneurons during development and regeneration to gain an understanding of developmentally-regulated substances that are re-expressed after nerve injury to adult motoneurons*. The other phase of research is to investigate the role of these substances to changes in and around axotomized adult motoneurons that are considered germane to regeneration: whether the up-regulation of these substances influences anterograde (growing axonal tip at the injury site and reinnervation of the target site) and retrograde (glial reaction and afferent synaptic displacement) regenerative processes.

Diane E. Borst, Ph.D., Research Assistant Professor, USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function***, and ***Structure and Function of Organ Systems***. Genes that are expressed at higher relative levels in a given tissue, or tissue region, are likely to be critical to specialized tissue function. Changes that alter the expression of these genes, or their subsequent gene products, may underlie tissue-specific diseases. *Dr. Borst studies genes that are highly expressed in the eye. Her laboratory is currently focused on the control of interphotoreceptor retinoid-binding protein (IRBP) gene expression. IRBP is synthesized in the retina solely by the photoreceptor cells and is critical for proper retinal function*. Dr. Borst is also interested in the functional genomics of fovin. The fovea is located in the macular region of the retina and is the highly specialized area of the retina responsible for high acuity vision. Fovin is a novel, previously unidentified, gene; a long-term objective is to determine fovin's function in health and disease.

Howard J. Bryant, Ph.D., Associate Professor, USU SOM Department of APG, is an instructor in the ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience*** Course. He is also an Associate Professor of Nurse Anesthesia and is the Co-Course Director of ***GSN Physiology*** and ***GSN Neuroscience I and II***. Dr. Bryant has a long-time interest in the electrophysiology of the vascular smooth muscle membrane and its relation to the etiology of hypertension. *In vivo* and *in vitro* studies are carried out using animals with hypertension and their respective normotensive controls to better understand the role of smooth muscle electrophysiology in the development and maintenance of hypertension. *In some experiments, animals are treated with antihypertensive agents to ameliorate the hypertension; and, the effects of these antihypertensive agents on the smooth muscle membrane are examined*.

Ruth E. Bulger, Ph.D., Professor, USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function*** and ***Structure and Function of Organ Systems***. She is a co-editor of the book, Ethical Dimensions of the Biological and Health Sciences, and has a long-term interest in teaching and publishing in the field of the ethics of scientific research and teaching. Her present research involves evaluating baseline knowledge and understanding of the responsible

conduct of research (RCR) among in-coming graduate students at four academic health centers. *The goal of this work is to help faculty and program directors, who are charged with RCR education, to focus their teaching objectives and to refine their methods by identifying areas in which students are most likely to misunderstand, or to be ignorant of, essential concepts in scientific integrity*.

Rolf Bunger, M.D., Ph.D., Professor, USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function*** and ***Structure and Function of Organ Systems***. *One of Dr. Bunger's long-term interests includes the development of therapeutic regimens that could be used in heart lung bypass procedures and hemorrhagic shock*. The fundamental concept is that it should be feasible to metabolically protect the myocardium, as well as other high-energy-turnover tissues (brain, kidney, liver), if metabolic strategies can set cellular redox states and energy potentials in such a way that cell function becomes better sustainable and more robust during periods of acute stress such as hypoxemia, ischemia, reperfusion, catecholamine or other toxicities. The current focus is on two natural compounds that appear to satisfy, in part, these requirements: *pyruvate*, a non-receptor-linked glycolytic metabolite; and, *adenosine*, a vasoactive ATP catabolite that serves as a precursor of the vital cellular adenylates and is a ligand at purinergic receptors in the heart and brain.

David E. Dobbins, Ph.D., Associate Professor, USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function*** and ***Structure and Function of Organ Systems***. *The principal focus of Dr. Dobbin's laboratory is the mechanisms of increased microvascular permeability to macro molecules, subsequent edema formation and potential therapeutic approaches to controlling transvascular fluid flux*. A second major avenue of study centers around the role of the lymphatic system in the formation and alleviation of edema and the potential for pharmacological manipulation of the lymphatic system in a clinical setting. Studies have shown that numerous endogenous vasoactive agents, including catecholamines, acetylcholine, bradykinin, histamine, dopamine, serotonin, platelet activating factor, prostaglandin, neurokinin A and Endothelin-1 all stimulate lymphatic smooth muscle contraction.

Zygmunt Galdzicki, Ph.D., Associate Professor, USU SOM Department of APG, is an instructor in the ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience*** Course. Dr. Galdzicki's research concerns mental retardation from trisomy 21 - Down Syndrome (DS). The full trisomy 16 mouse (*Ts16*) is an animal model for DS with a triplication of the whole mouse chromosome 16. The distal portion of mouse chromosome 16 is homologous to nearly the entire long arm of human chromosome 21. Since *Ts16* mice die *in utero*, investigators have developed the segmental trisomy *Ts65Dn* mouse. In this model, only part of the chromosome 16 is triplicated and the *Ts65Dn* mouse lives into adulthood. The laboratory focuses on signal transduction pathways and synaptic plasticity in *Ts65Dn* mice using electrophysiological, optical and molecular techniques in order to understand the causes of impaired hippocampal function. *To the extent that abnormalities in the trisomic mouse model of DS represent changes in the human DS brain, this research can provide new clues on the causes of mental retardation in DS.*

Martha C. Johnson, Ph.D., Associate Professor, USU SOM Department of APG, is an educator-track faculty member who teaches in all of the anatomy and physiology medical school courses and in the Neuroscience Graduate Program. Her focus is on basic science medical education, with an emphasis on embryology. She has presented papers on teaching four-dimensional concepts and the place of embryology in today's medical school curriculum.

Sharon L. Juliano, Ph.D., Professor, USU SOM Department of APG, is an instructor in the ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience*** Course. Her laboratory is interested in the determination of the factors mediating adult and developmental plasticity of the neocortex. Two streams of research occur simultaneously in the lab. The first studies the development of the cerebral cortex and focuses on factors important in the migration and differentiation of cells in the cortical layers. The lab is particularly interested in the role of radial glia that guide neurons into the cerebral cortex and in Cajal Retzius cells that signal positional information to migrating neurons. *The lab also is interested in the interaction between acetylcholine and neurotrophic factors that allow the cerebral cortex to improve functional responses after lesions/disease that normally result in reduced cortical capacity*. They are using genetically engineered cell lines or other vectors to deliver neurotrophins into the cerebral cortex.

Joseph T. McCabe, Ph.D., Professor and Vice Chair for Faculty Affairs, USU SOM Department of APG, is an instructor in the ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience*** Course. His laboratory focuses on determining factors mediating the deleterious effects of hemorrhagic shock and traumatic brain injury. Of recent interest has been testing the protective effects of diazoxide, a mitochondrial K*ATP* opener that shows great promise as a protectant of vital organs following hemorrhagic shock and the effects of steroids, in particular progesterone, as a medication for the treatment of traumatic brain injury. Diazoxide might prove to be an effective acute therapy for hemorrhagic shock when used in combination with a vasopressor drug. The use of a two-fold approach is based upon the hypothesis that the two most deleterious actions arising in hemorrhagic shock are hypoxia and the disruption of mitochondrial function. The steroid, progesterone, has proven to have dramatic effects upon the expression of genes that regulate cell death (apoptosis). *Inhibition of cell death may prove to be effective as one means of reducing neurological impairments from brain trauma*.

David Mears, Ph.D., Assistant Professor, USU SOM Department of APG, is an instructor in the ***Anatomy Block II: Clinical Head and Neck and Functional Neuroscience*** Course. The goal of Dr. Mears' laboratory is to elucidate the cellular and molecular mechanisms involved in the physiological regulation of insulin secretion and how these pathways are involved in the pathogenesis of diabetes. Insulin secretion from pancreatic *B*-cells is tightly regulated by plasma glucose levels, circulating hormones, and locally released neurotransmitters. Defects in the responsiveness of the *B*-cell to these signals led to the development of type II diabetes mellitus. Since previous studies have shown that changes in *B*-cell membrane potential and intracellular Ca*2+* are crucial steps in regulated insulin secretion, a particular focus is on the modulation of *B*-cell electrical activity and intracellular Ca*2+* levels by nutrient and neurohormonal signals. Studies are also underway to examine *B*-cell function and dysfunction in *Psammomys obesus*, an animal model of dietary induced obesity and diabetes.

Gregory P. Mueller, Ph.D., Professor and Vice Chair for Research, USU SOM Department of APG, is an instructor in the APG Course, ***Structure and Function of Organ Systems***. More than half of all known neuroendocrine peptides are alpha-amidated and in nearly all cases, this structural feature is essential for receptor recognition and signal transduction. Alpha-amidation is a terminal modification in peptide biosynthesis and can itself be rate limiting in the overall bioactivation of peptide messengers. Thus, regulation of alpha-amidation has importance to the vital roles of alpha-amidated peptides in intercellular communication, including control of brain, pituitary, pancreatic and gastrointestinal functions. A major objective of Dr. Mueller's research is to define the mechanisms that control the activity of alpha-amidation

by directly regulating the enzyme involved. Understanding the physiologic regulation of alpha-amidation, and the basis for its control by pharmacologic treatments, should enable new approaches for inquiry into the role of peptide alpha-amidation in health, disease and one's response to therapeutic interventions.

Motilal B. Pamnani, M.D., Ph.D., F.A.H.A., Professor USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function*** and ***Structure and Function of Organ Systems***. Over the past 26 years, Dr. Pamnani's laboratory research has been in the field of hypertension. In particular, the role of endogenous natriuretic factors in the mechanism of the low renin, volume-epanded type of hypertension. This type of hypertension is present in 30-40 percent of all essential hypertensives, especially in African Americans and the elderly. The research involves not only the understanding of the basic mechanism of this type of hypertension, but also its prevention and treatment. *In collaboration with military investigators from the Walter Reed Army Institute of Research, the role of the endothelium-derived relaxing factor is under study*. The role of two nitric oxide synthases (cNOS and iNOS) in hemorrhagic shock is also being studied. *The present studies search for a therapy that will postpone decompensation and, if necessary, maintain tissue perfusion after the onset of the decompensation phase of hemorrhagic shock*. Since hemorrhagic shock is a dreaded complication of severe battlefield injuries, intervention could significantly improve the overall survival rates in the combat wounded.

Stephen Rothwell, Associate Professor, USU SOM Department of APG, is the Course Director of ***Structure and Function of Organ Systems*** and an instructor in the Course, ***Introduction to Structure and Function***. Uncontrolled hemorrhage due to traumatic injury is a major cause of morbidity and mortality in military casualties. Dr. Rothwell's research has focused on developing enhanced hemostatic agents that can preserve the lives of our wounded soldiers. Huma platelets, a vital component of the coagulation system, presently can not be stored long enough to be shipped to foreign theaters of operation. *In collaboration with the Department of Blood Research at the Walter Reed Army Institute of Research, Dr. Rothwell developed a rabbit kidney bleeding model that can evaluate the efficacy of preserved human platelets. Dr. Rothwell is currently working on an interactive hemostatic dressing composed of salmon fibrinogen and thrombin under funding provided by the Office of Naval Research and in collaboration with industry sources*.

Alan E. Seyfer, M.D., F.A.C.S., Distinguished Professor, USU SOM Department of APG, is the Course Director of ***Introduction to Structure and Function, Part IB & IC***. *His laboratory research interests have been in the field of bone morphogenetic proteins and in the development of biocompatible bone regeneration materials*. His clinical interests have been in the treatment of syndactyly (webbed fingers), cleft lip and palate, craniofacial disorders, rheumatoid hand reconstruction, chest wall reconstruction, and breast reconstruction. ***He is certified by the American Board of Surgery and the American Board of Plastic Surgery and has the Certificate of Added Qualifications in Surgery of the Hand awarded by both of these Boards***.

James M. Terris, Ph.D., Associate Professor, USU SOM Department of APG, is an instructor in the APG Courses, ***Anatomy Block I: Introduction to Structure and Function*** and ***Structure and Function of Organ Systems***. His research interests include renal conservation of salt and water. In mammals this is accomplished by a unique countercurrent mechanism capable of excreting a low volume of urine with minimal salt loss. *The focus of the laboratory is on the regulation of transport processes in the kidney*. The general approach is to analyze the component parts of the kidney, the individual renal tubule segments that make up the nephron, to obtain an integrated view of the regulation of NaC1 and water balance by the

kidney. Peptide-derived polyclonal antibodies have been generated permitting nephron profiling of these transporter and channel proteins under a number of experimental and clinical settings, including congestive heart failure, cirrhosis, hypertension, and nephrotic syndrome. In addition, many knockout mouse models are available, permitting an evaluation of compensatory modifications in the remaining channels and transporters.

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Biochemistry and Molecular Biology - School of Medicine.

Individual Contributions.

Paul D. Rick, Ph.D., Professor and Chair, USU SOM Department of Biochemistry and Molecular Biology, has directed his long-term research interests at determining the mechanisms involved in the biogenesis and assembly of the outer membrane of Gram-negative bacteria. More specifically, *he is interested in defining the genes and enzymes involved in the assembly of enterobacterial common antigen (ECA), a cell-surface glycolipid that is present in the outer membrane of all bacteria belonging to the family, Enterobacteriaceae (Gram-negative enteric bacteria)*. Using a combined genetic and biochemical approach, Doctor Rick has succeeded in defining many of the genes and enzymes involved in ECA assembly. Although the ECA was discovered in 1962, its function has not been defined despite the efforts of many investigators. However, the occurrence of ECA only in Gram-negative enteric bacteria suggests that it serves an important function for these organisms. Indeed, data obtained in Doctor Rick's laboratory strongly suggests that it is required for the growth and survival of these organisms in their normal ecological niche; i.e., the gastrointestinal tract of animals and man. His research is funded by a grant from the National Institutes of Health; and, he continues to serve on the Editorial Boards of several scientific journals.

Peter D'Arpa, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, studies *topoisomerase I*, an enzyme that is the molecular target of a widely used class of anti-cancer drugs. His laboratory studies how anti-cancer drugs affect *topoisomerase I* and lead to the elimination of cancer cells. Other research explores the molecular cell biology of *topoisomerase I* and *topoisomerase I-interacting proteins*. The goal of his research is to characterize the cellular functions of *topoisomerase I* and proteins that interact with it to ultimately improve therapies utilizing *topoisomerase I-targeting* anti-cancer drugs.

Saibal Dey, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, works on a human protein (P-glycoprotein) found in the cell membranes of cancerous as well as normal cells. This protein removes structurally unrelated hydrophobic compounds from cells by acting as a pump. Since most of the anti-cancer and anti-microbial drugs are hydrophobic in nature, this protein prevents them from reaching their targets. Doctor Dey has been working on the mode of action of this protein and on the molecular mechanism by which this protein can be inactivated using pharmacological agents. The outcome of his study could improve the availability of chemotherapeutic drugs at their site of action and aid in the treatment of cancer and microbial diseases. Doctor Dey and colleagues published: *Functional Characterization of Glycosylation Deficient Human P-glycoprotein Using a Vaccinia Virus*

Expression System in the Journal of Membrane Biology, Volume 173, pages 203-214; and, he also wrote a review on *Biricodar* in Current Opinion in Investigational Drugs, Volume 3, pages 818-823. Doctor Dey was awarded a five-year RO1 grant from the National Institutes of Health for his studies on P-glycoprotein. Dr. Dey and his laboratory team are actively engaged in researching the molecular basis of drug resistance both in cancer cells and in microbial pathogens; they have undertaken a research endeavor to study drug resistance in leishmaniasis. Leishmaniasis is a parasitic disease affecting 10-15 million people worldwide. It is caused by an infectious agent called Leishmania and transmitted to humans through the bites of female sandflies. Although leishmaniasis is confined in the temperate regions of the world, an alarming number of cases have been diagnosed among the active duty United States military personnel returning from service in Afghanistan and the Middle East. *Dey's research is directed towards identifying the drug pump, understanding its mode of action at the molecular level, and formulating ways to inactivate it. They will search libraries of synthetic and natural compounds to find potential small molecules that can interact with the pump and inactivate it. Successful inactivation of the pump will help to overcome resistance to antimony-containing drugs in the parasite and improve therapeutic treatment against leishmaniasis*.

Teresa M. Dunn-Giroux, Ph.D., Professor and Vice Chair, USU SOM Department of Biochemistry and Molecular Biology, studies complex lipid molecules in yeast that are found in cell membranes. Similar compounds in humans are found in the membranes of the brain and nerves. The human brain has several hundred varieties of these compounds. Several gene products (both enzymes and regulatory proteins) are required to synthesize these complex molecules. The discovery of these genes and their function in producing these molecules in yeast is made possible by genetic methods developed in Doctor Dunn's laboratory. *This work will likely suggest what processes in the nerves or brain are affected or regulated by these molecules*. Using a powerful genetic screen devised in her laboratory, many of the genes encoding the sphingolipid biosynthetic enzymes have been identified. A grant to characterize the microsomal fatty acid elongating enzymes was awarded to Doctor Dunn by the National Science Foundation. Doctor Dunn continues to serve as a member of the Metabolic Biochemistry Review Panel for the National Science Foundation.

David A. Grahame, Ph.D., Associate Professor, USU SOM Department of Biochemistry and Molecular Biology, studies metal-containing enzymes in the Archaea, a genetically distinct group of microorganisms that provide insight into the early evolution of life on Earth. *Doctor Grahame studies fundamental problems of how metals such as cobalt, iron and nickel function in several highly unusual enzyme systems*. These processes are closely related to how cobalt acts in the anti-anemia vitamin B-12, and how iron functions in the body. *These studies advance our understanding of metal-containing enzymes in metabolic, ecological, and environmental processes, and contribute to the use of microorganisms for bioremediation, agricultural, and biomedical applications*. Doctor Grahame receives extramural research support from the Department of Energy and from the National Science Foundation. Doctor Grahame has also received research support from the United States Army Soldier and Biological Chemical Command (SBCCOM) for a project on Biological Threat Agent Stimulants.

Susan Haynes, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, has identified proteins that regulate the production of gametes (eggs and sperm) in fruit flies. A major cause of human infertility is impaired sperm production. Because sperm develop similarly in flies and humans, *these studies on fruit flies could lead to novel treatments to correct human male infertility*

and to the development of novel pharmacological agents for male contraception. Similarly, the protein that regulates egg production is conserved in humans, and understanding its role could have similar applications to human health. Doctor Haynes has served as the co-chair of two Washington area regional scientific groups: the RNA Club and the Drosophila Interest Group. She is a member of the Executive Committee of the Molecular and Cell Biology Graduate Program and has served on the thesis committees for students in the graduate program. Her research has been funded by an extramural grant from the National Institutes of Health and an intramural grant from USU.

David S. Horowitz, Ph.D., Associate Professor, USU SOM Department of Biochemistry and Molecular Biology, *works on the molecular processes involved in the production of messenger RNA, which carries information from the cell's genes to form the blueprint for the synthesis of cellular proteins*. When initially synthesized, the genetic information is encoded in a large linear polymer containing segments of information separated by non-information-bearing segments. Processing the RNA for the protein synthesis machinery of the cell requires the removal of the non-information segments and the joining of the information-containing segments. How the many cellular macromolecules, that participate in this fundamental process, work together is necessary to understand protein production in cells. Doctor Horowitz receives extramural research support from the National Institutes of Health.

Tharun Sundaresan, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, was a Howard Hughes Research Associate and, later, a Research Assistant Professor at the University of Arizona in Tucson, before he came to USU. Dr. Sandaresan earned his Master Degree in Biochemistry from the P.S.G. (Autonomous) College of Arts and Science in Coimbatore, India. He later completed a Doctor of Philosophy Degree in Life Sciences at the Centre for Cellular and Molecular Biology in Hyderabad, India. *Dr. Sundaresan is studying the mechanism of eukaryotic mRNA decay using yeast as the model system*.

Daniel R. TerBush, Ph.D., Assistant Professor, USU SOM Department of Biochemistry and Molecular Biology, studies exocytosis in yeast. Exocytosis is the process whereby vesicles containing lipid and protein cargo bud off the trans Golgi and are targeted to, and fuse with, the plasma membrane. Exocytosis is highly regulated; and, exocytic vesicles only fuse at specific, localized domains on the plasma membrane. A multiprotein complex, termed the Exocyst, serves as a specific targeting patch for the exocytic vesicles and is required for their fusion at these specialized domains in yeast and in higher eukaryotes. The research has focused on understanding the role of a protein, Exo70p, in vesicular trafficking. *Understanding the biochemical mechanism of how exocytic vesicles are specifically targeted to certain areas will help understand such basic processes as cellular differentiation, neurotransmission, and axon pathfinding*. Doctor TerBush's research is funded by the National Science Foundation.

Xin Xiang, Ph.D., Associate Professor, USU SOM Department of Biochemistry and Molecular Biology, studies how intracellular transport works. Cells move material from areas of assembly to areas of destination like a monorail on intracellular networks composed of protein tubules. A virus that infects a cell can use this pathway to transport its genes to the nucleus. Neuronal function requires movement of material produced in the nucleus to the nerve endings and back. A molecular motor, composed of several proteins, attaches to the transportable material and moves it to its destination. *The understanding of which*

proteins are used to regulate the motor; attach cargo to it; and, transport and release the cargo area could lead to antiviral drugs or enhanced neuronal function. Doctor Xiang' extramural research is funded by the National Science Foundation.

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Dermatology - School of Medicine.

Individual Contributions.

Leonard C. Sperling, M.D., COL, MC, USA, Professor and Chair, USU SOM Department of Dermatology, has authored a textbook entitled, Atlas of Hair Pathology with Clinical Correlations. This textbook was available for purchase in March of 2003 and was featured at the American Academy of Dermatology Meeting. The book contains 365 illustrations and is the first comprehensive review of the microscopic pathology of hair disease. It was published by Parthenon Publications. In addition, Dr. Sperling and colleagues published an article, *Viral-associated trichodyslplasia in immunocompromised patients*, in the **Journal of the American Academy of Dermatology** in February of 2004, Volume 50(2), pages 318-322.

Tom Darling, M.D., Ph.D., USU SOM Department of Dermatology, Director of the Sulzberger Laboratory for Dermatologic Research, co-authored the following book chapter in a new dermatology textbook, first presented at the American Academy of Dermatology Meeting in March of 2003: *Application of Molecular Biology to the Study of Skin*, Dermatology, 1st Edition, Harcourt Health Sciences, London, 2003.

Lieutenant Colonel (promotable) Scott A. Norton, Associate Professor, USU SOM Department of Dermatology, has been recognized as an authority on the use of smallpox vaccination. He is working closely with the Centers for Disease Control and the American Academy of Dermatology to develop guidelines for the administration of this vaccine.

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Family Medicine - School of Medicine.

Departmental Activities.

Two-Year Renovation of the University Family Health Center Is Completed. The Department of Family Medicine completed a two-year renovation project for the University Family Health Center. A ribbon-cutting ceremony was held on January 25, 2005; the renovation has resulted in premier clinic

facilities, which will enhance the medical services provided to the University and showcase the excellence of Military Medicine to the USU students.

The Department of Family Medicine provides comprehensive Family Medicine, to include primary care for students, dependents and empaneled faculty, staff and their families. Integrated specialty care includes weekly Sports Medicine, Dermatology, and Genetics Clinics. Minor surgical procedures (cryotherapy, culposcopy, and direct nasolaryngoscopy) are provided at the Family Health Center; and, patient education services (pregnancy health, diabetic teaching, exercise prescriptions and injury prevention) are also components of the myriad of services provided by the Family Health Center. For example, as reported in the 2004 USU Cost Avoidance Fact Sheet, the Department of Family Medicine provided 18,114 hours of patient care and consultation, which generated $1,856,774 of cost avoidance for the Military Health System.

Department Utilizes First Endowment to Enhance Education in Military Family Medicine. During 2003, the Department of Family Medicine established its first endowment to enhance education in Military Family Medicine. At a ceremony held on September 5, 2003, Pfizer Pharmaceuticals presented the Henry M. Jackson Foundation with an unrestricted $20,000 grant to initiate an endowment on behalf of the Department of Family Medicine. During 2004, three senior residents were chosen from across the Department of Defense Family Medicine Residency Programs to participate in a one-month elective in intensive faculty development: 1) **Captain Patrick Depenbrock, USA,** from Fort Bragg; 2) **Lieutenant Kristian Sanchack, USNR,** from Camp Pendleton; and, 3) **Captain Cecelia Ficek, USAF,** from Offutt Air Force Base. These residents were selected because of their superior performance and aptitude for future faculty careers in Military Family Medicine.

Department of Family Medicine Hosts Two Major Conferences. The Department of Family Medicine hosted two significant conferences, during 2004, which were attended by hundreds of physicians: *The 13th Annual Capitol Conference Board Review Course* and the *Fifth Annual American Society of Sports Medicine Marine Corps Marathon Conference*.

The Department of Family Medicine Sports Medicine Fellowship Program. The Department of Family Medicine Sports Medicine Fellowship Program is headed by **Lieutenant Colonel Fred H. Brennan, D.O., MC, USA, Assistant Professor, USU SOM Department of Family Medicine.** LTC Brennan, along with **Commander Scott Pyne, MC, USN,** of the Naval Academy, and **CAPT Bruce Adams, MC, USN,** from the Marine Corps Base at Quantico, Virginia, helped to organize and to provide medical support for the more than 20,000 participants in the annual Marine Corp Marathon, held in Washington, D.C., in October of 2004.

Smoking Prevention Programs Provided at Six Elementary Schools. The Department also sponsored the ***Tar Wars Smoking Prevention Programs*** at six local elementary schools for hundreds of students. This program uses the skills of the Department Faculty and the enthusiasm of the USU SOM medical students to deliver this important program, throughout the local area.

Individual Contributions.

Colonel Brian V. Reamy, USAF, MC, Associate Professor and Chair, USU SOM Department of Family Medicine, was selected to present a plenary lecture on Hyperlipidemia to the 56th Annual American Academy of Family Physicians (AAFP) Scientific Assembly held in Orlando, Florida, in October of 2004. **Colonel Francis G. O'Connor, MC, USA, Associate Professor, USU SOM Department of Family Medicine,** was selected to direct Workshops on Musculoskeletal Medicine at the same meeting. The AAFP Annual Assembly is the largest single physician continuing education meeting in the world.

Colonel Francis O'Connor, MC, USA, Associate Professor, USU SOM Department of Family Medicine, completed and published the 3rd edition of the textbook, Sports Medicine for the Primary Care Physician; the definitive text on the topic, in the Fall of 2004.

Colonel William Sykora, USAF, MC, Assistant Professor, USU SOM Department of Family Medicine; Major Pamela Williams, USAF, MC, Assistant Professor, USU SOM Department of Family Medicine; and **Cindy C. Wilson, Ph.D., Professor, USU SOM Department of Family Medicine,** were co-presenters of their research on enhancing Sports Medicine training within a Family Medicine Clerkship at the Society of Teachers of Family Medicine, in Albuquerque, New Mexico, in January of 2005.

Cindy C. Wilson, Ph.D., C.H.E.S., Professor, USU SOM Department of Family Medicine, coordinated, on behalf of the Department of Family Medicine, with the SOM Offices of Faculty Affairs and Medical Education to sponsor numerous courses and seminars, which strongly supported faculty development throughout the University. During 2004, 195 USU faculty members earned over 1,000 hours of continuing education.

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Medical History - School of Medicine.

Individual Contribution.

Dale C. Smith, Ph.D., Professor and Chair, USU SOM Department of Medical History, participated in numerous background discussions with the National News Media, during 2004. Doctor Smith continued to bring the public's attention to the unique and critically required practice of military medicine and the essential provision of continuity, leadership, and medical readiness by USU for the Military Health System. For example, *CBS Sunday Morning News* featured a piece on battlefield medicine, for release on Sunday, April 13, 2003. The CBS reporters and crew interviewed both the current (Doctor Smith) and past (Robert Joy, M.D.) Chairs of the Department of Medical History, covered a portion of a lecture, and filmed extensively in the USU Patient Simulation Laboratory (PSL). On October 13, 2003, an article, *America's Near-Invisible Wounded*, in the New Republic, featured Doctor Smith's expertise reference American casualties in Iraq. He explained how, since Desert Storm, the size of the battlefield and the forward movement of American forces has made the transfer of casualties to a hospital a much longer

trip; this prompted the Army to rethink the medevac process and eventually yielded a system, on display in Iraq today, which brings surgeons to the wounded rather than vice-versa.

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Medical and Clinical Psychology - School of Medicine.

***Departmental Activities*.**

The USU SOM Departments of Medical and Clinical Psychology and Family Medicine and the USU Center for Health Disparities Research and Education - Project EXPORT. The USU SOM Departments of Medical and Clinical Psychology and Family Medicine were awarded a $7 million grant from the National Institutes of Health (NIH) National Center on Minority Health and Health Disparities to sponsor the USU Center for Health Disparities Research and Education, referred to as *Project Export*. The Center's goal is to promote positive health-related change and ultimately eliminate disparities among racial and ethnic minorities through research, education, training, community outreach, and information dissemination. During 2004, the Center's Research Component sponsored four research projects, which utilized networks outside of traditional settings to eliminate health disparities, establish weight management studies, conduct health assessment surveys, and ensure cultural proficiency training to achieve the Center's goals. *The Center's Education Component provided cultural sensitivity training for eight of the twelve Family Medicine Clerkship rotation sites at the various Army, Navy, and Air Force activities where USU medical students carry out their actual clerkships*. The Community Outreach and Information Dissemination Component collaborated with multiple partners to solidify programs for high school students to tour USU and learn about careers in the health care field. Other partners worked with the Center to maximize the health care provider's encounter as a tool in reducing health disparities through its sponsorship of interactive workshops, presentations by improvisational actors, and the development of questionnaires. **Richard Tanenbaum, Ph.D., USU SOM Department of Medical and Clinical Psychology,** serves as the Principal Investigator. **David S. Krantz, Ph.D., Professor and Chair, USU SOM Department of Medical and Clinical Psychology,** is the Center Director; and, **Lori Dickerson-Odoms** is the Program Manager. (*See CURRICULUM RENEWAL and RESEARCH PROGRAMS AND CENTERS in Section II of the Journal for further information on Project EXPORT*.)

USU SOM Departments of Medical and Clinical Psychology, Medicine, Military and Emergency Medicine, and Preventive Medicine and Biometrics Receive NIH Funding for an Interdisciplinary Training Program. The National Heart Lung and Blood Institute (NHLBI) of the National Institutes of Health (NIH) awarded an Institutional Training Grant (T32) to **David S. Krantz, Ph.D., Professor and Chair, USU SOM Department of Medical and Clinical Psychology,** and **Tracy Sbrocco, Ph.D., Associate Professor, USU SOM Department of Medical and Clinical Psychology,** for an *Interdisciplinary Training Program in Behavioral Medicine and Cardiovascular Research*. The NIH grant provides stipends and expenses for a program to train predoctoral and postdoctoral students in areas of cardiovascular risk factors and prevention and cardiac pathophysiology. The program represents a collaboration of faculty from the USU SOM Departments of Medical and Clinical Psychology, Medicine, Military and Emergency Medicine, and Preventive Medicine and Biometrics.

Faculty Publications, Grants, and Educational Programs. Faculty in the Department of Medical and Clinical Psychology continue to publish research articles in refereed journals in the following areas: 1) obesity and its treatment in minority populations; 2) environmental and occupational aspects of work-related pain disorders in military and non-military populations; 3) acute and chronic stress and its effects on coronary artery disease; 4) behavioral effects of nicotine and effects of early experience in animal models; and, 5) cognitive-behavioral treatment of seasonal affective disorder. In addition to faculty research grants funding this research, the Department also holds a major role in the NIH-funded USU Center for Health Disparities Research and Education, Project EXPORT, and maintains an NIH-funded NRSA Training Program in Cardiovascular Behavioral Medicine.

In addition to its involvement in the education of medical students, the Department continues to maintain two graduate doctoral level programs: one in Clinical Psychology; and, one in Medical Psychology research. Last year, the Clinical Psychology Program received re-accreditation from the American Psychological Association for seven years (the maximum granted). The Military Clinical Psychology Program continues to graduate active duty military clinical psychologists for the Military Health System.

Individual Contributions.

David S. Krantz, Ph.D., Professor and Chair, USU SOM Department of Medical and Clinical Psychology, was selected to serve as President-Elect of the Division of Health Psychology of the American Psychological Association. This division includes more than 4,000 members and represents United States psychologist educators, researchers, and clinicians working in the areas of health and behavior.

Michael Feuerstein, Ph.D., MPH, Professor, USU SOM Department of Medical and Clinical Psychology, was invited by the United States Department of Labor, Occupational Safety and Health Administration, National Advisory Committee on Ergonomics, to present the policy implications of his research. Doctor Feuerstein's presentation, given on January 27, 2004, was part of the Committee's effort, through a small group of invited researchers, to obtain advice and recommendations regarding new ergonomic guidelines, research and outreach. In May of 2005, Dr. Feuerstein briefed the TRICARE Management Activity on a study he completed on *Adherence to DoD Clinical Practice Guidelines and Outcomes*. The objective of this study was to determine the rate of provider adherence to the DoD/VA Clinical Practice Guidelines (CPG) for Acute Low Back Pain and the extent to which provider adherence is associated with patient satisfaction, general health, functional outcome, and health care cost. The results showed that between 10 to 40 percent of cases received CPG adherent care during guideline specified intervals within a 75 day period of care. This was observed prior to, and three years following, system-wide implementation. No differences were found between Low Back Pain and upper extremity diagnoses groups in their rates of change in the four outcomes over years. Multi-variable regression analyses controlling for a number of demographic and clinical variables indicated that CPG adherence was related to better functional outcomes and lower health care costs. Cases with patients who received higher levels of adherent care also reported higher levels of patient satisfaction and general health. (*See Section II, RESEARCH CENTERS AND PROGRAMS, Center for Ergonomics and Workplace Health, for further information on Doctor Feuerstein's work.*)

Neil E. Grunberg, Ph.D., Professor, USU SOM Department of Medical and Clinical Psychology, delivered several development workshops to Army and Air Force medical personnel. For this work, Dr.

Grunberg received an Award for Outstanding Instruction in Faculty Development from the Tripler Army Medical Center. He also participated in the Malcolm Grow Family Medicine Program on *Mentoring and Teaching Medical Residents*.

Willem J. Kop, Ph.D., Associate Professor, USU SOM Department of Medical and Clinical Psychology, was featured on the ***Ediets.com*** website on May 9, 2005, in the article, *Your Anger Can Be Deadly*. In the first study of its kind, a group of researchers has demonstrated that mental stress can provoke dangerous heart rhythms on its own. Certain irregular heart rhythms put people at a high risk for sudden death. The unpredictable nature of these rhythms has posed a major challenge in preventing sudden cardiac death, as written by Dr. Kop. *Dr. Kop emphasizes the importance of the fact that exercise testing may miss some patients at risk; mental stress can provoke a potentially fatal instability in heart rhythm in people who have heart disease at much lower heart rates than is caused with exercise testing*.

Kathyryn Roecklein, Fourth-Year Graduate Student, Medical and Clinical Psychology, in collaboration with **Doctor Kelly Rohan; Ignacio Provencio, Ph.D., Assistant Professor, USU SOM Department of Anatomy, Physiology and Genetics (APG);** and **Mark D. Rollag, Ph.D., Professor, USU SOM Department of APG,** completed a study observing an independent frequency of a specific gene mutation for melanospin in patients with seasonal effective disorder (SAD). This work builds on Doctors Provencio and Rollag's recent discovery of melanospin, a retinal pigment. Their current work is pursuing additional research to assess whether melanopsin may be involved in the pathophysiology of SAD and other circadian rhythm disorders. Ms. Roecklein received a Henry M. Jackson Foundation Fellowship for 2004-2005.

Sari Schwartz, Third-Year Graduate Student, Medical and Clinical Psychology, received a 2004 Young Scholar Award from the American Psychosomatic Society for her paper entitled, *Detection of Mental Stress-Induced Ischemia in Patients with Reduced Left Ventricular Dysfunction*.

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Medicine - School of Medicine.

Individual Contributions.

Robert E. Goldstein, M.D., Professor and Chair, Department of Medicine, is serving as the Chair of the Mortality Endpoint Review Committee (MERC) for the up-coming MADIT-CRT, a randomized trial of a new device for the prevention of severely symptomatic heart failure. This is a large-scale international effort managed overall by Dr. Arthur Moss, Professor of Medicine at the University of Rochester. Dr. Goldstein is listed as a Super-Reviewer by Cardiovascular Research, an international journal for research in cardiology and related areas; Dr. Goldstein also reviews for many other prestigious journals. He also serves as the Section Editor on Hypertrophic Cardiomyopathy for the PIER Program (Physician Information and Education Resource) for the American College of Physicians.

Teodor Brumeanu, M.D. Associate Professor, USU SOM Department of Medicine, recently joined the University. An active researcher, formerly at the Mount Sinai Medical School in New York, Dr. Brumeanu holds various NIH-funded research grants, which he brought with him to USU. His most recently submitted research proposal deals with important treatment strategies for juvenile diabetes.

Louis Cantilena, M.D., Ph.D., Professor of Medicine and Director, Division of Clinical Pharmacology, serves as the President of the Association of Clinical Pharmacology Units (ACPU), an international organization of clinical research professionals who primarily conduct early phase human drug studies. He also chairs the Non-Prescription Drug Advisory Committee for the Food and Drug Administration. Doctor Cantilena is a reviewer for the Internet Journal of Medical Toxicology; and, he is also a member of the Patient Safety Subcommittee of the American College of Medical Toxicology.

Major David Carnahan, USAF, MC, Assistant Professor, USU SOM Department of Medicine, Wilford Hall Medical Center, Lackland Air Force Base, Texas, has been named Chair, Internal Medicine Residency Curriculum Committee, ACP Educational Liaison for the Air Force Chapter (SAFP), and USU Internal Medicine On-Site Clerkship Director at the Wilford Hall Medical Center.

Captain Barbara Cooper, USAF, MC, Assistant Professor, USU SOM Department of Medicine, Malcolm Grow Medical Center, Andrews Air Force Base, Maryland, is the new USU Internal Medicine On-Site Clerkship Director, at the Malcolm Grow Medical Center. She recently completed the UCLA School of Medicine Medical Acupuncture Course and is a Certified Acupuncturist. She is co-authoring an Air Force Instruction on Breastfeeding for Active Duty Women; and, in a volunteer-capacity, she is the La Leche League Leader having started a group at the Andrews Air Force Base.

Commander G. Dodd Denton, MC, USN, Associate Professor, USU SOM Department of Medicine, Deputy Director, Third-Year Clerkships, and Director, National Naval Medical Center (NNMC) Ambulatory Rotations, was selected to attend the prestigious Medical Faculty Development Course at Stanford University. Following that training, he has conducted several workshops at USU and NNMC to train residents in the various learning modules. He was an invited speaker at various sites to include: 1) Grand Rounds at the Malcolm Grow Medical Center, in April of 2004, and at a workshop at the Regional Society of General Internal Medicine Meeting, held in March of 2004; his topic was, *Teaching Students in the Ambulatory Setting: Help Is Only a RIME Away*; 2) he was also a workshop leader at the San Antonio Uniformed Services Health Education Consortium Annual Program Directors Retreat, held in August of 2004, where he spoke on the topic, *From Product to Process: Measures of Clinical Competency*; 3) he also presented at the National Capital Consortium Course for Program Directors, held in January of 2005, on the *Theory and Practice of Assessment*; 4) in May of 2004, he presented at the 27th Annual Society of General Internal Medicine National Meeting, held in Chicago, Illinois; the 2004 CDIM Annual Meeting, at Nashville, Tennessee, held in October of 2004; and, at the 2004 RIME Annual Meeting in Boston, Massachusetts, during November of 2004, on the topic, *Medical Student Resource Use and Knowledge Acquisition in the Medicine Clerkship*; 5) he presented at the National Capital Consortium Course for Program Directors on the *Theory and Practice of Assessment*, in January of 2005; and, 6) he presented at the National Children's Hospital, during February of 2005, on *Control of Session Module of the Stanford Clinical Teaching Series*. In addition, Dr. Denton was invited to speak at the 28th Annual Meeting of the Society of General Internal Medicine National Meeting, held in May of 2005, on the topic, *Blood*

Pressure Monitoring Into Your Clinical Practice. Dr. Denton has had three articles published in Teaching and Learning in Medicine during the past year.

Andre Dubois, M.D., Ph.D., Research Professor of Medicine, was the senior author in the lead Major Article of the April 15, 2003 issue of the Journal of Infectious Diseases; one of the figures submitted with Doctor Dubois' article was selected to illustrate the cover of that particular issue of the Journal. He co-chaired a session entitled, *Evolving Perspectives on H. pylori Disease and Management*, during the 2003 Meeting of the American Gastroenterological Association. At the same meeting, he presented a lecture entitled, *Worldwide Persistence of Helicobacter pylori: Role of Intracellular and Tissue Invasion*, as well as two posters. Dr. Dubois is the Director, Laboratory of Digestive Diseases, and has received Competitive Renewal Funding for the period of September 30, 2004 to September 30, 2008 ($1,350,400 total funding for four years) for his National Institutes of Health/National Cancer Institute R01 grant entitled, *Bacterial & Chemical Carcinogens in Gastric Oncogenesis*. This study will evaluate the theory that *H. pylori* infection is necessary, but not sufficient, to cause gastric cancer. This theory has important medical and public health implications.

Major Steven Durning, USAF, MC, Associate Professor, USU SOM Department of Medicine, Director, Introduction to Clinical Reasoning Course, for second-year medical students, has developed a variety of innovative measures that have significantly improved medical student performance on both standardized tests and clinical practicums. Dr. Durning has published several articles in Academic Medicine and Teaching and Learning in Medicine, as well as an article in the Research in Medical Education Academic Medicine Supplement. Additionally, Doctor Durning serves as a reviewer for these medical education journals. He was also a finalist for the New Investigator Award for Research in Medical Education Meeting, in 2003; and, he served as an invited speaker at several meetings, including the meeting of the Association of Medical Educators in Europe (AMEE). Dr. Durning was selected to receive, in April of 2004, one of the most prestigious awards offered by the American College of Physicians, the first Herbert S. Waxman Excellence in Medical Student Education Award from the National American College of Physicians, during the National ACP Conference, held in San Francisco, California. The new award is designed to provide national recognition to an outstanding medical educator. Dr. Durning also received the Research in Medical Education (RIME) Thomas Hale Ham New Investigator Award from the Association of American Medical Colleges/Research in Medical Education (AAMC/RIME).

Margaret MacKrell Gaglione, M.D., Associate Professor, USU SOM Department of Medicine, Associate Clerkship Director, is often named most influential teacher by the third-year USU SOM students on Internal Medicine Rotations at the Naval Hospital in Portsmouth, Virginia. Dr. Gaglione has had a very active year. She was invited to present the following Grand Rounds and Workshops: 1) *Diagnosing and Treating your Learner's Clinical Reasoning Skills*, with Dr. Paul Hemmer, at the Association of Medical Education in Europe Annual Meeting, held in Edinburgh, Scotland, in September of 2004; 2) a Pre-Course for the Annual Navy Chapter Meeting of the American College of Physicians, at Portsmouth, Virginia, in October of 2004; 3) a presentation at the Association of Internal Medicine Annual Meeting, in Nashville, Tennessee, during October of 2004; and, 4) Grand Rounds at the National Naval Medical Center, in Bethesda, Maryland, on February 3, 2005. In addition, Dr. Gaglione presented the keynote lecture on *Obesity: The Neglected Problem*, at the Annual Navy Chapter Meeting of the American College of Physicians, held in Portsmouth, Virginia, in October of 2004. During the past year, Dr. Gaglione had three papers published in Academic Medicine; and, one article published in Medical Education. Dr. Gaglione is active in community

service and speaks on nutrition at local middle schools; she also serves as an on-site physician for the *American Diabetes Association 30/50/100 Mile Bike Tour: Tour de Cure* in Chesapeake, Virginia.

Lieutenant Colonel William Gilliland, MC, USA, Associate Professor, USU SOM Department of Medicine, Director, Rheumatology Fellowship Program, Walter Reed Army Medical Center, received much recognition during the past year. Dr. Gilliland's Fellowship Program was recently reviewed by the Residency Review Committee and received a maximum five-year accreditation, with no citations, a feat seen in only five percent of Internal Medicine Programs nation-wide. In addition, Dr. Gilliland recently completed a Master Degree in Health Professional Education, as the first military physician to be awarded this degree. He serves on the National American College of Rheumatology's Training and Workforce Committee and was selected to Chair the Educational Forum for the 2005 Annual Meeting.

Colonel Thomas Grau, USAF, MC, Assistant Professor, USU SOM Department of Medicine, was selected as Program Director Internal Medicine, at the Wilford Hall Medical Center, Lackland Air Force Base, Texas. Wilford Hall is the largest Air Force Military Treatment Facility and the principal USU teaching hospital. Dr. Grau's selection emphasizes the importance of USU faculty experience in developing senior military medical educators.

Mark C. Haigney, M.D., Associate Professor, USU SOM Department of Medicine, and Director, Division of Cardiology, was recently recognized for his outstanding work in clinical research by being awarded the J.J. Leonard Prize for Excellence in Clinical Research, Uniformed Services University. In addition, he serves on various important committees: the Mortality Endpoint Review Committee (MERC) for the MADIT-CRT, a large-scale multi-international trial of defibrillators in heart failure; the Executive Committee, Amiodarone Versus Implantable Defibrillators-2 Trial, a VA/DoD-funded study of ICDs in subjects with minimal LV dysfunction; and, the National American Heart Association Cell Transport and Metabolism Peer Review Study Group (April 2003-2006). He is the Principal Investigator of a two-year grant (beginning in 2004 at $130,000) from the American Heart Association, Mid-Atlantic Region (co-PI with Dr. Shao-kui Wei), *Autonomic Modulation of Na/Ca Exchange in Heart Failure*. A prolific writer, Dr. Haigney's recent papers have appeared in prestigious peer-reviewed journals such as: the Journal of the American College of Cardiology (two publications during 2004); the Mayo Clinic Proceedings (2004); and, the Journal of Clinical and Experimental Hypertension (2005).

Lieutenant Colonel Paul Hemmer, USAF, MC, Associate Professor, USU SOM Department of Medicine; Clerkship Program Director for the USU Department of Medicine; and President of the USU Faculty Senate, is the President-Elect of the Clerkship Directors in Internal Medicine (CDIM), the national organization of medical educators.

Przemyslaw Hirszel, M.D., Professor of Medicine, Director, Division of Nephrology, continues to serve as a valued member of the Department of Medicine's Executive Committee and as a mentor to junior faculty members, whom he guides in their research endeavors. He also serves on several University and School of Medicine committees.

CAPT Brian P. Monahan, MC, USN, Associate Professor, USU SOM Department of Medicine, and Director, Division of Hematology/Oncology, also serves as the Program Director in Hematology and Medical Oncology at the National Naval Medical Center in Bethesda, Maryland. He is the Chair of the Department of Defense Working Group on Cancer Research and Policy at the United States Military Cancer Institute. He is also an Adjunct Assistant Professor at the University of Maryland School of Nursing in Baltimore, Maryland. He was recently appointed to the Advisory Council of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of the National Institutes of Health (NIH) of the United States Department of Health and Human Services. He is a member of the American Society of Clinical Oncology, the American Society of Hematology, the American College of Physicians, and the American Medical Association.

Chantal Moratz, Ph.D., Research Assistant Professor, USU SOM Department of Medicine, Division of Rheumatology and Immunology, was an invited speaker to the Second RGS Protein Colloquium, presented by The Division for Molecular Pharmacology of the American Society for Pharmacology and Experimental Therapeutics. The presentation was entitled, *Targeted Disruption of RGS1 Leads to Excessive B-lymphocyte Response to Chemokines, Disturbed Plasma Cell Localization, and Distorted Immune Tissue Architecture*. In 2004, her research findings were published in five well respected journals.

Lieutenant Commander Janet Myers, MC, USN, Assistant Professor, USU SOM Department of Medicine, Director, National Naval Medical Center Ward Clerkships, was elected to Fellowship in the American College of Physicians. She is a member of the Editorial Board, American College of Physicians' Medical Student Medical Knowledge Self Assessment Program, 3rd Edition; member, American College of Chest Physicians' Women's Network; and, Manuscript Reviewer, CHEST, Official Publication of the American College of Chest Physicians. Her paper, *Necrotizing Tracheobronchitis in A Patient On High Frequency Oscillatory Ventilation*, was accepted for publication in the Journal of Bronchology.

Colonel Deborah Omori, MC, USA, Associate Professor, USU SOM Department of Medicine, Director, Introduction to Clinical Medicine I & II, is a Member, CDIM Educational Innovations Committee, Clerkship Directors in Internal Medicine, from January 2005 through December 2006. Dr. Omori recently published a paper in the American Journal of Medicine in 2005; she also authored a chapter on Smallpox in *Case-Based CME Bioterrorism Preparedness Series for the Primary Care Physician*, a collaborative effort with the Rush University Medical Center and USU. She also conducted two national workshops on *Improving the Early Identification and Intervention of Professionalism Issues*, at the 27th Annual Society of General Internal Medicine Meeting conducted in Chicago, Illinois, on May 15, 2004; and, at the Clerkship Directors in Internal Medicine (CDIM) National Meeting held in Nashville, Tennessee, on October 15, 2004.

Louis N. Pangaro, M.D., Professor, USU SOM Department of Medicine, and Vice Chairman for Educational Programs, has become President of the Alliance for Clinical Education (ACE), a multi-disciplinary group formed, in 1992, to foster collaboration across specialties to promote excellence in clinical education of medical students. Its members represent all seven of the national organizations of clerkship directors.

Matthew Pollack, M.D., Professor, USU SOM Department of Medicine, uses various animal models to study pathogenic mechanisms of bacterial diseases and host responses to a common grouping of opportunistic bacteria known as gram-negative bacteria. He has published extensively in the fields of bacterial diseases, Pseudomonas infections, endotoxin, sepsis, and septic and hemorrhagic shock. His research on cytokines and hemorrhagic shock has serious implications for military medicine since shock continues to be one of the most common and serious consequences of battlefield injury and one of the most frequent causes of death.

Lieutenant Colonel Michael Roy, MC, USA, Professor, USU SOM Department of Medicine, and Director, Division of Military Internal Medicine, was recently promoted to the academic rank of professor; he was also selected for promotion to the rank of Colonel, in the United States Army. His research activities include: 1) Serving as the Primary Investigator for a $1.25 million grant from the United States Army Medical Research and Materiel Command to study the health effects of DEET, permethrin, and pyridostigmine under stress conditions; he completed the study and presented the results at national meetings and has prepared manuscripts for publication; 2) Participating as the Co-Investigator and subject matter expert on a small business initiative grant with Simmersion Inc., to develop interactive, computer-based teaching modules on bioterrorism for health care providers; and, 3) Serving as the Co-Investigator in a study on the safety of lasers as non-lethal weapons, under a grant from the Non-Lethal Weapons Directorate. Dr. Roy provides peer review for eleven medical journals, with the quality of his reviews recognized for being in the top 10 percent of all reviewers by the *Annals of Internal Medicine*. He is the Editorial Consultant for the American College of Physicians' Information and Education Resource, an on-line evidence-based guide for clinicians, for modules on both posttraumatic stress disorder and complementary and alternative medicine in the treatment of depression. His publications include: Coordinator of a Series of Case-Based Booklets on Bioterrorism, in addition to co-authoring two of the booklets on anthrax and viral hemorrhagic fevers. He is the author of ten articles and two letters published, or selected for publication, in peer-reviewed medical journals. His lectures and abstract presentations include three abstract presentations at the XXXV International Congress of Military Medicine. He co-authored five abstracts presented at national scientific meetings; and, he provided approximately one dozen lectures to military and civilian audiences on improving the diagnosis and treatment of depression and anxiety in primary care, at locations around the Nation, including Philadelphia, Baltimore, Washington, and San Francisco.

Terez Shea-Donohue, Ph.D., Research Professor of Medicine, continues to serve as a member of the National Institutes of Health (NIH/NIDDK CIGP) Study Section; and, she is an *Ad hoc* reviewer on the ZRG-1 Special Emphasis Panel, NIH CIGP and GCMB Study Section. Doctor Shea-Donohue is on the Working Team on Gastrointestinal Motility and its Control in Health and Disease, a collaborative effort between the World Congress of Gastroenterology (Montreal 2005) and AstraZeneca (educational grant) to create a new set of teaching/research material in this field. Doctor Shea-Donohue's new grant support includes an NIH RO1HL-62282, entitled, *Substance P Mediated Cardiovascular Inflammation*; she is a Co-Investigator on the research project, which began February of 2004 and will continue through January 31, 2008, at $200,000 per year. In April and July of 2004, she provided two Invited Presentations at the Ponce University School of Medicine in Ponce, Puerto Rico, and the Center for IBD Research, at the University of Chicago in Chicago, Illinois. Significantly, she published seven articles, over the past year, in prestigious peer-reviewed journals.

Colonel Roy H. Wong, MC, USA, Professor of Medicine, Director, Division of Digestive Diseases, was promoted to the academic rank of Professor of Medicine at Howard University. Within the

American College of Gastroenterology, he serves as follows: Member, Board of Trustees; Chairman of the Ad Hoc Committee on Training; Director of the First GI Jeopardy, American College of Gastroenterology; Director: First Fellows Conference of the American College of Gastroenterology; Member of the Abstract Selection Committee, Esophageal Section; and, Moderator of the Esophagus and Pediatric Session, Annual American College of Gastroenterology Meeting. Also, he is an invited speaker at the Annual American College of Gastroenterology Meeting concerning CT. In the American Gastroenterology Association, Dr. Wong is the Associate Chairman of the Non-GERD and Non-Variceal Bleeding Abstract Selection Committee; Moderator, AGA Research Forum, Esophageal Motility and Physiology, AGA/DDW, New Orleans, Louisiana (2004); and, Moderator, AGA Spotlight on the Best of Digestive Disease Week. In addition, he participated in the CME Videosatellite Program held on May 19, 2004, in Chicago, Illinois; and, he presented four abstracts at national meetings.

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Microbiology and Immunology - School of Medicine.

Individual Contributions.

Alison D. O'Brien, Ph.D., Professor and Chair, USU SOM Department of Microbiology and Immunology. ***Overview.*** Dr. Obrien's major interest is in the pathogenesis of bacterial infections. Specifically, her laboratory investigates: 1) the virulence mechanisms of *E. coli O157:H7* and other Shiga toxin-producing *E. coli*; 2) the contribution of the Rho-modifying Cytotoxic Necrotizing Factor (CNF) to urinary tract infections and prostatitis caused by uropathogenic *E. coli*; and, 3) identification of *Bacillus anthracis* spore surface antigens against which protective monoclonal antibodies may be generated or that can be incorporated into a multivalent anti-anthrax vaccine. ***Pathogenicity of Shiga Toxin-Producing E. Coli*:** Shiga toxin-producing *E. coli* (STEC) cause food- and water borne outbreaks and sporadic cases of intestinal disease manifested as diarrhea, and/or bloody diarrhea (hemorrhagic colitis, HC). About five to ten percent of children infected with STEC can subsequently develop a life-threatening kidney dysfunction called the hemolytic uremic syndrome (HUS). Two important virulence factors associated with many STEC strains are the Shiga toxins (Stxs) and the adhesion, intimin. The long-term objectives of this research project are to define the pathogenic mechanisms by which STEC cause disease and to develop strategies for the prevention and treatment of STEC-mediated hemolytic uremic syndrome. ***Military Relevance*:** *E. coli O157:H7* has the potential to simultaneously infect large numbers of people who ingest as few as 100 organisms in common source food- or water-borne outbreaks (example, the July 1996 outbreak in Japan that affected approximately 10,000 people). In addition, the rate of secondary transmission of *E. coli O157:H7* is high. Therefore, large-scale infection of soldiers with *E. coli O157:H7*, or another Shiga toxin-producing *E. coli* isolate, would likely result in an incapacitating illness among troops. Furthermore, Shiga toxin and other Stx family members are considered potential biological warfare/terrorist threats as indicated by the CDC-mandated restrictions on the shipment of Stxs and Stx-expressing clones.

Cytotoxic Necrotizing Factor Type 1 (CNF1): CNF1 is a member of a family of bacterial toxins that target the Rho family of small GTP-binding proteins in mammalian cells. CNF1 deamidates a single glutamine residue in RhoA, Cdc42, and Rac1, but not in Ras. This deamidation results in the constitutive activation of these GTPases, which can trigger actin stress fiber formation, multinucleation, or cell death, depending on the target cell and dose of toxin. CNF1 is frequently produced by *Escherichia coli* strains that cause urinary tract infections (UTIs) such as cystitis, prostatitis, and pyelonephritis. In support of this

epidemiological connection, Dr. Obrien's group recently showed that CNF1 not only induces apoptosis in human uroepithelial cells, but also provides a growth advantage to uropathogenic *E. coli* (UPEC) in a mouse model of ascending UTI when compared to CNF1-negative isogenic mutants. Additionally, Dr. O'Brien and colleagues found that CNF1 enhances the degree of inflammation and resulting tissue damage in bladders of infected mice and in prostates of rats challenged intraurethrally with CNF1-producing UPEC, and that CNF1-producing UPEC survive better than CNF1-negative isogenic mutants in the presence of human polymorphonuclear leukocytes (PMNs). Taken together, these findings led to the following hypothesis. CNF1 enhances the pathogenicity of UPEC by: 1) promoting uroepithelial cell shedding; 2) evoking a large influx of PMNs while providing toxin-producing *E. coli* protection against PMN-mediated killing; and, 3) facilitating deeper invasion of the bladder or prostate by the infecting strain. The long-term objectives of this project are to test this theory. ***Military Relevance:*** Urinary tract infections (UTIs), of which more than 80 percent are caused by *E. coli*, are among the most common types of bacterial disease in adults. Women are much more likely to have UTIs than are men, a gender disparity that is believed to result from the shorter female urethra. Indeed, as many as 20 percent of all women have at least one episode of UTI in their lifetime, and recurrent UTIs affect approximately one in ten women in the United States. Thus, UTIs, which include infections of the bladder (cystitis) and kidney (pyelonephritis), are a significant source of morbidity among women in the military.

Bacillus anthracis Spore Antigens: *Bacillus anthracis* is a Gram-positive spore-forming rod that, until recently, was best known among microbiologists and veterinarians as an agent of disease in herbivores. That spores of *B. anthracis* could be used as weapons of warfare or bioterrorism has long been recognized, but no successful nefarious application of the microbe in the United States, or during the Gulf War, had been reported, until October 4, 2001. From then, until December of 2001, a total of 22 cases of confirmed or suspected bioterrorism-related anthrax occurred; eleven, of which, were inhalational. For all 22 of these cases, the victims probably acquired the illness by direct or indirect contact with highly concentrated preparation(s) of dried spores present in envelopes sent through the mail. Unfortunately, those individuals potentially exposed to anthrax spores required an extended course of antibiotic therapy. Thus, a remaining health concern is that people who receive antibiotic prophylaxis may present with inhalational anthrax after the conclusion of their therapy as dormant viable spores germinate. One way to increase the likelihood of patient survival, as well as to enhance the probability of protection for those exposed to *B. anthracis* spores is to prevent the germination of the infectious dormant spores into active vegetative cells. The goal of this research project is to identify surface antigens of *Bacillus anthracis* spores against which protective monoclonal antibodies may be generated, or that can be incorporated into a multivalent anti-anthrax vaccine. In addition, this project has a component that emphasizes the development of a mouse model of inhalational anthrax, wherein protective strategies that block spore germination may be evaluated using an *in vivo* imaging system (IVIS). ***Military Relevance:*** The potential use of *B. anthracis* as a weapon of biowarfare was brought to the forefront in the aftermath of the terrorist attacks of September 11, 2001. In light of these recent events, the development of therapeutic agents against *B. anthracis* infection is paramount for the protection of both deployed military personnel and civilians who may come into contact with sabotaged contaminated materials.

ATCC Toxin Laboratory Subcontract: The National Institutes of Health (NIH) has established the Biodefense and Emerging Infections Research Resources Program (BRP). The mission of this program is to allow easy access to NIAID Category A, B, & C agents to scientists with legitimate research, while denying access to individuals or groups with nefarious purposes in mind. This subcontract involves the creation of a facility for the acquisition, authentication and production of select agent toxins, and, subsequently, for the transfer of samples of these quality-assured toxins as reagents to authorized users in accordance with the Select Agent Transfer and Possession Guidelines (HHS 42 CFR Part 1003). ***Military Relevance:*** United States military personnel are at greater risk of encountering biological weapons than any other members of

our society. Therefore, the military scientific community has long been the leader in biodefense research. Readily available standardized research materials for the development of toxin assays, therapeutics, and vaccines would be a great advantage to both the military and civilian biomedical research communities. Ultimately, Armed Forces personnel in the field would benefit from the research facilitated with these research materials.

Within the last 24 months, Dr. O'Brien has published eleven articles and manuscripts in prestigious peer-reviewed primary publications. In addition, Dr. O'Brien also published three reviews and invited papers and chapters with the American Society for Microbiology Press and a prestigious peer-reviewed journal.

Christopher C. Broder, Ph.D., Associate Professor, USU SOM Department of Microbiology and Immunology, had a most productive year. The major focus of Dr Broder's research is the structural and functional analyses on the interactions between enveloped viruses and their cellular receptors. Human immunodeficiency virus (HIV) and new emerging paramyxovirus agents are the two main areas of Dr. Broder's present research work. ***HIV Entry:*** The goals of his work are to identify the steps and requirements of viral envelope glycoprotein (Env)-mediated membrane fusion, the determinants of viral tropism, the discovery of new viral receptors, and the mechanism of Env-mediated fusion. A detailed understanding of these processes will lead to the discovery of new methods of intervention. Current work on HIV-1 includes the Env-mediated fusion mechanism and its interaction with CD4 and co-receptors. The HIV-1 Env serves two functions that are critical in the replication cycle of the virus: binding to host cells and mediating membrane fusion through what is believed to be receptor-induced conformational alterations in its structure. In earlier work, he identified two distinct co-factors (CXCR4/CCR5) for HIV-1 Env-mediated fusion and virus infection. These molecules are members of the chemokine receptor superfamily and are now recognized as actual co-receptors for HIV-1; they influence both the species and cell-type tropism of the virus. His laboratory is engaged in an extensive analysis of the roles these co-receptors play in the fusion process on the molecular level, how they interact, and what role they may play in HIV-1 pathogenesis. In addition, his group is interested in the structure of these viral envelope glycoproteins, with particular emphasis on the immunological characteristics of the native glycoproteins. His laboratory has carried out an extensive analysis of the antigenic structure of native oligomeric Env and use of oligomeric Env preparations as a vaccine immunogen, otherwise known as gp140, which he previously developed while at the National Institutes of Health. Ongoing research work includes the analysis of HIV-1 primary isolate-derived oligomeric gp140 preparations from a host of alternate HIV-1 clads, including a variety of genetically-modified versions of the proteins with the goal of enhancing a neutralizing antibody response when used in small animals. In addition, in collaboration with other laboratories at USU, his team is pursuing novel prime-boost HIV-1 vaccination strategies, with particular HIV-1 isolate Env proteins, using Venezuelan Equine Encephalitis (VEE) replicons and soluble oligomeric gp140 immunogen preparations in small animals and non-human primates.

Hendra Virus and Nipah Viruses: The second area of his work is the investigation of Hendra virus and Nipah virus, which are newly emerging and highly lethal zoonotic agents. These studies are in collaboration with several scientists located at the Australian Animal Health Laboratory in Geelong, Australia. Both viruses are new members of the *Paramyxoviridae* and are now the prototypic members of a new Genus, Henipahvirus. They are related to the Morbilliviruses, of which Human Measles virus is a member, yet they are uniquely distinct from all other known Paramyxoviruses, both on the genomic molecular level as well as their biological, species tropism characteristics. Both viruses are classified as zoonotic BSL-4 agents. Hendra virus emerged in 1994 and was isolated from fatal cases of respiratory disease in horses and humans. Later in 1998-1999, an outbreak of severe encephalitis in people with close

contact exposure to pigs in Malaysia and Singapore occurred. In all, more than 276 cases of encephalitis, including 106 deaths, had been reported - a near 40 percent fatality rate upon infection. Pigs appeared to be an amplifier of the Nipah virus; and, these viruses can also be economically devastating (i.e., over 1.2 million pigs were slaughtered to stem the Nipah virus outbreak). They appear to infect through the respiratory system initially and are capable of causing viremia. Hendra and Nipah viruses both have broad species tropism, which is unusual because most paramyxoviruses are species restricted and do not have other reservoirs in nature. The potential to be weaponized and used as biological warfare agents is clearly possible. They may be amplified in cell culture or embryonated chicken eggs; and, they could be used as a terror weapon targeting humans, as well as, livestock, which would serve as virus amplifiers. Most recently, both Nipah and Hendra viruses continue to make their presence known; and, in early 2004, two Nipah outbreaks in Bangladesh have been confirmed, totaling some 53 human cases of infection. Hendra virus reappeared in Northern Australia, in late 2004, with two cases of fatal infection in horses and one non-fatal human case. Several significant observations in the most recent Nipah virus outbreaks have been made, to include: a higher incidence of acute respiratory distress syndrome; possibly a higher incidence of person-to-person transmission; significantly higher case fatality rates (60-70 percent); and, no direct link to infected livestock or domestic animals. The development of therapeutic or intervention strategies to deal with these emerging viral agents is now of importance. Dr. Border's group has developed recombinant systems to study the attachment and membrane fusion-entry mechanisms of these viruses; and, they have developed novel reagents, which may serve as potential vaccines, as well as, those that can specifically block virus infection and spread. He is also engaged in recombinant virus-like particle formation and assembly for reagent development and for understanding the requirements of particle formation in these novel viral agents. During 2004-2005, Dr. Broder published five articles in prestigious peer-reviewed journals.

Stephen J. Davies, B.V.Sc., Ph.D., Assistant Professor, USU SOM Department of Microbiology and Immunology, has a major interest in the pathogenesis of helminth infections, from the biology of the parasites themselves to the immune responses induced by these pathogens. Specifically, his laboratory investigates the immunopathogenesis of schistosomiasis using a laboratory animal model of human disease. ***Immune Modulation of Schistosome Development:*** Dr. Davies' previous studies using a murine model of *Schistosoma mansoni* infection have demonstrated that, paradoxically, schistosomes require signals from host CD4+ T cells to complete their development normally, suggesting that blocking interactions between blood flukes and host T cells might provide a novel approach to interfering with parasite development. Further, these findings have important implications for efforts to develop effective anti-schistosome vaccines, as the positive effects of T cells on schistosome development may interfere with protective T cell responses induced by vaccination. To establish the molecular identity of the immune signals to which schistosomes respond and elucidate the mechanisms by which CD4+ T cells facilitate blood fluke development, schistosome infection phenotypes are being evaluated in a variety of gene-targeted and transgenic mice using molecular, cellular and biometric techniques. Results from IL-2 mice suggest that early events in T cell activation are critical to parasite development. The significance of T cell receptor ligation in parasite development is now being evaluated using mice deficient in components of the TCR signalling pathway, including PKC-0 and Bc110. To gain insights into the evolutionary conservation of schistosome developmental responses, other schistosomatoids, for which the laboratory mouse is a permissive host, are also being analyzed, including *Schistosoma japonicum* and *Schistosomatium douthitti*. ***Military Relevance:*** Schistosomes infect approximately 200 million people world-wide, the majority of whom reside in developing countries in tropical and temperate climate zones. Schistosome infections are also a significant concern for United States service personnel, Peace Corps workers and civilians who visit areas where transmission occurs. Schistosomiasis has frequently been diagnosed in military personnel deployed to endemic areas and is considered by the Deployment Health Clinical Center to be a significant concern for personnel currently

deployed to the Middle East (*http://www.deploymenthealth.mil/deployments/gulfwar/schisto.asp*). The work in Dr. Davies' laboratory aims to understand how immune responses to schistosomes can be directed to prevent the establishment of blood fluke infections - an essential prerequisite to the development of effective anti-schistosome vaccines.

T Cell Activation by Helminth Parasites: Other pathogens such as viruses, bacteria, and protists activate the immune system by expressing pathogen-associated molecular patterns (PAMPs) that are recognized by host Toll-like receptors (TLRs). However, helminths appear not to express recognizable PAMPs and the mechanism by which these pathogens activate the immune system remains unclear. Using a murine model of *S. mansoni* infection, Dr. Davies' laboratory is analyzing the temporal and spatial distribution of T cell activation during the early phase of infection when schistosome larval stages migrate through various host organs and tissues. These studies indicate that the nature and extent of T cell activation varies with anatomical location. In particular, T cell responses to migrating parasites in intestinal tissues appear qualitatively different from those observed in other organs. This difference may relate to the unique immunological ability of the intestine to discriminate between antigens derived from harmful pathogens and those from harmless sources such as food material and intestinal flora and fauna. The role of professional antigen-presenting cells (APCs) such as dendritic cells and regional variations in dendritic cell populations is being examined to gain insights into regional differences in T cell activation. The findings will be important for the laboratory's efforts to manipulate T cell responses to inhibit the establishment of schistosome infections and will contribute to answering the currently unresolved question of how helminths activate the host immune system. ***Military Relevance:*** Helminths, including nematodes, flukes and tapeworms, collectively infect approximately 2 billion people world-wide, or about a third of the world population. Helminth infections are therefore a significant concern for United States service personnel deployed to areas where transmission of helminth parasites occurs. An understanding of how helminths activate T cells is essential to efforts aimed at controlling the sometimes excessive inflammation that accompanies helminth infection and may also be relevant to other situations where excessive T cell activation is detrimental, such as allergy, atopy, and inflammatory bowel disease.

Dr. Davies has had five articles, manuscripts, and reviews published in peer-reviewed primary publications during the past year (i.e., the International Journal of Parasitology and the Journal of Immunology). In addition, Dr. Davies received the *Research Scholar Development Award*: National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Maryland; this research grant covers from 2004 through 2006, and is entitled, *Immune Modulation of Schistosome Development*.

Chou-Zen Giam, Ph.D., Professor, USU SOM Department of Microbiology and Immunology, had a productive year. Research in Dr. Giam's laboratory concerns the molecular biology and pathogenesis of HTLV-1 with a special focus on the viral regulatory protein, Tax, and its interaction with cellular transcription factors, signaling molecules, and mitotic regulatory factors. Dr. Giam's laboratory is also using molecular and proteomic approaches to study the regulatory proteins: Rta and K-bZIP and NS5A of Kaposi's sarcoma-associated herpesvirus/human herpesvirus 8 (KSHV/HHV-8) and hepatitic C virus (HCV), respectively. ***Molecular Biology and Pathogenesis of HTLV-1:*** The diseases caused by the human T-lymphotropic virus type I (HTLV-1), adult T-cell leukemia (ATL) and tropical spastic paraparesis/ HTLV-1 associated myelopathy (HAM/TSP), have their etiologies in the dysregulated proliferation of CD4+ T-cells. HTLV-1 encodes a critical trans-activator, Tax, which augments HTLV-1 viral mRNA transcription greatly and usurps regulatory mechanisms critical for cell activation and division to facilitate viral replication. The ability of Tax to interact with a multitude of cellular factors to effect potent activation of NF-kB, cell cycle perturbation, and cell transformation is thought to be responsible for the clinical outcomes of HTLV-1 infection. His research focuses on the elucidation of the mechanisms of HTLV-1

Tax action and the mechanism of HTLV-1 leukemogenesis. A United States patent application to exploit the anti-proliferative activity of Tax has been filed through the Henry M. Jackson Foundation.

KSHV and HCV Replication and Interaction with Host Cell Factors: Dr. Giam's research efforts on KSHV/HHV-8, and HCV concentrate on the purification of Rta, KbZIP, and NS5A; the mapping of the sites of phosphorylation of these proteins using tandem mass spectroscopy; and, the identification of cellular factors that co-purify with them using matrix-assisted laser desorption ionization-time of flight (MALDI-TOF) mass spectroscopy. The goal of his work is to elucidate the mechanisms of action of these critical regulatory proteins through the characterization of the cellular partners with which they interact. Dr. Giam has had two articles published in prestigious peer-reviewed primary publications during the past 12 months.

Ann E. Jerse, Ph.D., Associate Professor, USU SOM Department of Microbiology and Immunology. The major research interest of Dr. Jerse's laboratory centers on the mechanisms by which *Neisseria gonorrhoeae* adapts to the female genital tract. The primary research tool that Dr. Jerse and her staff utilize to address this question is a female mouse model of gonococcal genital tract infection that was developed in Dr. Jerse's laboratory. Dr. Jerse's research group currently uses this model to study the role of selected gonococcal virulence factors in infection, including anti-oxidant genes (catalase, cytochrome c peroxidase, methionine sulfoxide reductase), nitrite reductase, sialyltransferase and a phase variable set of outer membrane proteins called opacity proteins. Dr. Jerse also utilizes this model to study interactions between *N. gonorrhoeae* and certain commensal flora that have been proposed to protect against gonorrhea. A second research area in Dr. Jerse's laboratory is the development of vaccines and topical microbicides to prevent gonorrhea. Historically, pre-clinical testing of such prophylactic agents was hindered by the absence of a small animal model of infection. Utilizing the mouse model developed in her laboratory, Dr. Jerse and collaborators demonstrated that intranasal immunization of mice with gonococcal outer membranes results in reduced recovery of *N. gonorrhoeae*. Dr. Jerse is currently evaluating other vaccine antigens for the capacity to prevent murine genital tract infection. With regard to topical agents designed to prevent gonorrhea, Dr. Jerse and her staff recently showed that transmission of *N. gonorrhoeae* to mice can be blocked by several leading candidate vaginal microbicides, several of which are currently under phase II and III testing for the capacity to prevent sexually transmitted infections. ***Military Relevance:*** Gonorrhea ranks high among infections important to the military, second only to chlamydial infection among reportable infections. Over 1,000 cases of gonorrhea are reported in the United States Army each year. Upper reproductive tract infections, which are more serious in terms of time lost from duty and risk of complications, also occur in active duty men and women. In one study of a military population, 16 percent of acute epididymitis was due to *N. gonorrhoeae*. In another study, the rate of ectopic pregnancy was higher among military women than in the United States population at large and equal to the highest recorded rates in the world. The occurrence of ectopic pregnancy among women in remote posts or aboard ships is of special concern in that emergency care might be delayed. Pathogenesis studies performed in Dr. Jerse's laboratory will enhance the understanding of how *N. gonorrhoeae* persists in the genital tract to create a reservoir of infection in the community and will potentially lead to the identification of virulence factors that could be used in a vaccine. Dr. Jerse's work towards developing a vaccine and topical microbicides against gonorrhea is directly relevant to reducing the incidence and costs associated with gonorrhea in military personnel and their dependents. Dr. Jerse published two articles in prestigious peer-reviewed journals during 2004.

Susan G. Langreth, Ph.D., Associate Professor, USU SOM Department of Microbiology and Immunology, made a significant contribution to the ***teaching programs*** of the Department. Her principal

contribution was serving as the ***Course Director of Medical Microbiology and Infectious Diseases (MMID)***, a major 141-hour, second-year SOM course. Doctor Langreth is also the ***Course Director for the four related MedMicro Courses for graduate students (Immunology, Basic Bacteriology, Pathogenic Bacteriology, and Virology)***. For the MedMicro Course, she also served as the Parasitology and Mycology Sections Coordinator, a laboratory/small group instructor, and lecturer (8 hours plus reviews). Dr. Langreth's teaching contributions in other courses included a four-hour lecture in Malaria Epidemiology and Control (PMO569 Graduate Course) and 25 hours of laboratory instruction in Diagnostic Parasitology and Medical Zoology (PMO1002 First-Year Medical Student Course). She served on the Ph.D. Qualifying Examination Committee for EID Graduate Students and is on Dissertation Research Advisory Committees for three graduate students. Dr. Langreth's research is centered on characterization of the relict mitochondrial organelle in *Cryptosporidium parvum*, a protozoan pathogen that causes diarrhea, which is particularly severe in immunocompromised individuals. This work was supported by an intramural grant from USU through September 30, 2004. Dr. Langreth serves on the USU/SOM Executive Committee on Curriculum and on the MultiDiscipline Laboratories (MDL) Advisory Committee. She also served on the Department's search committees for a virologist and an immunologist. Doctor Langreth also published several articles in prestigious peer-reviewed journals during the past year.

Anthony T. Maurelli, Ph.D., Professor, USU SOM Department of Microbiology and Immunology. In the area of ***teaching***, Dr. Maurelli presented lectures in the ***Medical Microbiology and Infectious Diseases (MMID) Course*** (seven hours); and, he participated as a laboratory and small group session leader for that course. Dr. Maurelli also gave eight hours of lectures in the ***Molecular and Cell Biology (MCB) Genetics Course***, for which he serves as the Course Director, and led discussions in the ***Microbiology and Immunology Graduate Course on Prokaryotic and Eucaryotic Cell Biology and Genetics*** (4 class meetings) for which Dr. Maurelli is also Course Director. This year, Dr. Maurelli was awarded an R21 grant from the National Institutes of Health (NIH) to study metabolic modeling of invasive bacteria and HeLa cytosol. He has also received bridge funding while a competitive renewal of his NIH-supported Chlamydia grant is reviewed. Dr. Maurelli's service to the Department and to the USU community includes his membership on the University Safety Committee (of which he is the Chair), the University Biosafety Committee, and the Graduate Education Committee. Dr. Maurelli is a member of the Institutional Review Board of the Naval Medical Research Command. Additionally, he is an active participant on three graduate student committees (to include one of his own students). He is also the Director of the Microbiology and Immunology Graduate Program (i.e., academic director of the remaining students who entered the program before it merged with EID), the immediate supervisor of the Department's washroom personnel, and as noted above, Course Director for the MCB Genetics Course and the Prokaryotic and Eucaryotic Cell Biology and Genetics Course. Lastly, Dr. Maurelli gives freely of his time to elementary schools as a volunteer scientist. He was also an *ad hoc* member of one NIH study section, as well as, a reviewer for several journals. Over the past twelve months, Dr. Maurelli published two articles in prestigious peer-reviewed journals.

D. Scott Merrell, Ph.D., Assistant Professor, USU SOM Department of Microbiology and Immunology, conducts research in areas that impact public health and have military medical relevance. Having no known environmental reservoir, *H. pylori* infects over half of the world's population. Once colonized, it typically resides within the human host for the lifetime of the individual and can cause maladies that range in severity from gastritis, to ulcer disease, to the development of gastric carcinoma or mucosa-associated lymphoid tissue (MALT) lymphoma. Approximately 20 percent of those infected with *H. pylori* ultimately develop some form of overt clinical disease, and it is now accepted that disease outcome is determined by both bacterial and host genetic factors. However, the understanding of the process of disease

onset and progression is still in its infancy. Current work in Dr. Merrell's laboratory takes a two-pronged approach to investigate the process of *H. pylori* pathogenesis. First, since *H. pylori* colonizes and thrives within the human stomach, a site that is inhospitable to virtually all other microorganisms, the bacterium must be able to adapt to the stressful environment. In this organ, *H. pylori* experiences periods of extreme acidity, oxygen tension, iron limitation, and a number of other environmental stresses. Since the microbe's ability to sense and to respond to the environment being encountered is critical for colonization and long-term survival within the stomach, his laboratory has taken a genomic approach to define the transcriptional stress response of the bacterium to a number of different microenvironments. These studies are being extended by genetic and biochemical approaches to elucidate the role of individual genes in long-term survival and colonization of the bacterium. Second, his laboratory is investigating the host changes brought about by the interaction of *H. pylori* with eukaryotic cells. The bacterium is known to deliver a bacterial protein, CagA, to the host cell via a Type IV secretion apparatus. Once in the cell, CagA is tyrosine phosphorylated by members of the Src family of tyrosine kinases and subsequently binds to and deregulates the SHP2 phosphatase. Affected host cell signaling pathways past these are poorly understood, but it is known that the phosphorylation of CagA and subsequent deregulation of host cell signaling results in the induction of actin cytoskeletal rearrangements and morphological changes in infected gastric epithelial cells. In an effort to better understand *H. pylori* induced signaling events, the laboratory has defined host cell transcriptional changes that occur both *in vitro* (in tissue culture) and *in vivo* (in the murine gastric tract) upon interaction of the bacterium with host cells. Current studies are further investigating the roles of the effected genes using a biochemical and cell biological approach and attempting to define their expression levels in gastric biopsy samples from patients suffering from gastric cancer. During the past year, Dr. Merrell published four articles in prestigious peer-reviewed journals.

Eleanor S. Metcalf, Ph.D., Professor and Director of Emerging Infectious Diseases, USU SOM Department of Microbiology and Immunology, and Interim SOM Associate Dean for Graduate Education. In the area of ***teaching***, Dr. Metcalf is a dedicated, organized, and well-liked lecturer and laboratory/small group instructor for the ***Medical Microbiology and Infectious Diseases (MMID) Course***. She is also teaching in the ***Advanced Immunology Course: Cellular and Molecular Immunology***, the core course in the Emerging Infectious Diseases (EID) curriculum. Moreover, she gave four hours of lectures in the ***Molecular and Cell Biology (MCB) Techniques Course***. Dr. Metcalf is a member of several graduate students' Dissertation Committees; and, she chairs one of those Committees. Again this year, she has spent many hours on organizing and directing the Emerging Infectious Diseases (EID) Interdisciplinary Graduate Program. Additionally, during this past year, she has served as the Interim Associate Dean of Graduate Education. She also orchestrated the fifth gathering of prospective graduate students at USU. Dr. Metcalf's ***research endeavors*** have included the submission of an NIH competitive renewal, on which she serves as a subcontractor and which was funded in July of 2004, and an NIH R21 application, which was scored but not in the fundable range, which she will be resubmitting. Dr. Metcalf's ***service to the University*** (besides serving as the Director of the EID Program and the Interim SOM Associate Dean for Graduate Education) includes memberships on the Advisory/Oversight Committee for the Master Degree in Comparative Medicine Program; the M.D./Ph.D. Advisory Committee for the Physician Scientist Training Program; the University Space Committee; the USU SOM Research and Education Endowment Fund Oversight Committee; the Search Committee for the Chair of Pathology; and, the Chair of the Organizing Committee for the 2005 GEC Graduate Student Open House. Her contributions to the extramural scientific community include membership on a Dissertation Committee at the University of Pennsylvania and as an *ad hoc* reviewer for several journals. Basic science advances in the area of emerging infectious diseases can affect the current and future health of individuals throughout the Military Health System. Through the Emerging Infectious Diseases Graduate Program, the USU SOM has increased its capacity and commitment to training students

and fellows in areas of vital interest and importance to military medicine, such as biothreat and bioterrorism agents. Doctor Metcalf published two articles in prestigious peer-reviewed journals, during 2004.

Brian C. Schaefer, Ph.D., Assistant Professor, USU SOM Department of Microbiology and Immunology, participated as a lecturer (five hours), laboratory instructor, and small group session leader in the ***Medical Microbiology and Infectious Diseases (MMID) Course***. Over the last 12 months, Dr. Schaefer has been awarded two extramural grants: the Kimmel Scholar Award from the Sidney Kimmel Foundation for Cancer Research ($100,000/year for two years) and a grant from the Dana Foundation Program in Brain and Immuno-Imaging ($40,000/year for three years). He has also received a USU Exploratory Research Award ($70,000/year for two years); and, his NIH/NIAID RO1 submission has been selected for consideration for funding in October of 2005, through the *Select Payment* program. Additionally, he was a co-investigator on the recently funded NIH/NCRR S10 equipment grant (RR19083-01A1), which will be used to purchase a FACSAria cell sorter for the USU BIC Facility. Dr. Schaefer's laboratory currently consists of two post-doctoral fellows, one MCB graduate student, and two EID graduate students; he has also had two rotating EID students over the past year. Dr. Schaefer has provided service to the USU community by serving as a Co-Chair of the Biomedical Instrumentation Center (BIC) Subcommittee on Imaging, as the Coordinator of the MCB Seminar Series, and as an interviewer for prospective EID graduate students. Dr. Schaefer has also served as a grant reviewer for the National Science Foundation. During 2004, Dr. Schaefer had an article published in the Proceedings of the National Academy of Science.

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Military and Emergency Medicine - School of Medicine.

***Departmental Activities*.**

Graduate Programs in Undersea Medicine and Aviation Physiology. This new graduate program emphasizes multidisciplinary education and research, and represents both a philosophy and mechanism for facilitating scientific investigations that integrate basic and clinical sciences with applied environmental physiology. The objective of this graduate program is to serve the operational requirements of the Uniformed Services. The program's two specialties were developed in response to needs of the line community, particularly in the areas of Undersea Medicine and Aviation Physiology. These areas of study are unique from other medical fields of inquiry and demand specialized training. As such, the program's specialties unify a diversity of disciplines requisite for exploring questions relevant to operational activities and applied situational outcomes. The military student obtains a foundation in the basic sciences with research experience in experimental and applied physiology. The Undersea Medicine Specialty offers a Master of Science Degree (with thesis) and a Ph.D. Degree: and, the Aviation Physiology Specialty offers a Master Degree (with thesis). The graduate program accepted its first students, in August of 2002; and, there are currently two students enrolled in the program. Faculty for the program come from the Department of Military and Emergency Medicine, as well as, other SOM Departments. Collaborative faculty include both active duty officers (some from military laboratories) and civilians, all who are experts in their fields. The Program Director can be contacted by e-mail at <*RHernandez@usuhs.mil*>.

Applied Human Biology Division/Human Performance Laboratory - Establishment and Mission. The Human Performance Laboratory (HPL) was established, in 1984, as part of the Department of Military and Emergency Medicine, at USU, to provide a research base within the Department for conducting clinical and basic research projects relevant to military training and operations that would add to the understanding of factors that enhance/sustain human performance under operational conditions. In concert with the mission of USU, the mission of the HPL is to: 1) provide graduate, medical and other students and personnel at USU opportunities to participate in operationally relevant education and research experiences with a focus on maintenance and enhancement of human performance; 2) serve as a resource to USU and other DoD and government facilities for information relating to health, physical fitness, nutrition, and physical training programs; and, 3) maintain a strong research program for all aspects of human performance and military operational applications. Faculty and staff, within the HPL, participate in the education of medical and graduate students, in ongoing research efforts funded by the National Institutes of Health and the DoD, and in the provision of consultative support for the DoD. Activities of note include the following: ***Educational Materials for the Uniformed Services.*** In September of 1999, two manuals relating to Force Health Protection were prepared and published for the Navy by the faculty and staff in the HPL. These manuals, entitled *Force Health Protection: Nutrition and Exercise Resource Manual* and *Peak Performance Through Nutrition and Exercise*, were widely disseminated for use; many requests for additional printings continue to be received. In the Spring of 2001, both the Coast Guard Health Promotion Directorate and the Marine Corps requested permission to obtain and modify the manual, *Peak Performance through Nutrition and Exercise*, to be specific for their unique Services. Pictures relevant to their particular mission and selected words were changed so that the manual could be made available for all active duty Coast Guard personnel and Marines. Thus, these manuals are now being used by all Services in some capacity. In the Fall of 2002, the PHL produced an education tool, *A Compendium of Nutritional Products*, for divers in the United States Navy. Since the DoD is developing policies relating to the use of nutritional supplements, this document will be of great use to the Navy divers. In sum, educational products prepared by the HPL have been, and are currently being used on a worldwide basis; and, they continue to benefit those who serve in the Uniformed Services.

Individual Contributions.

Kevin Yeskey, M.D., CAPT, USPHS (Retired), Associate Professor, USU SOM Department of Military and Emergency Medicine, and Director, USU Center for Disaster and Humanitarian Assistance Medicine (CDHAM), and his CDHAM team completed multiple education and training activities during the past year. Dr. Yeskey was the Keynote speaker for the following organizations, during the past year: the Indian Health Service; Emergency Management Strategic Healthcare Group, Martinsburg, West Virginia; the Joint Special Operations Medical Officer's Orientation Course at Hurlbert Field, Florida; the University of South Florida; the American Community Preparedness Conference at Louisville, Kentucky; the Defense Medical Readiness Training Institute at Austin, Texas; the Department of Justice, U.S. Marshals Service; the Department of Health and Human Services USPHS Commissioned Corp Training: Public Health and Disasters, Triage, and Medical Consequences of Disasters; Mass casualties and disaster management, Center for International Rehabilitation, Mexico City. Dr. Yeskey was invited as a Subject Matter Expert at the following organizations: the Virtual Training Center at Dartmouth Medical School; the Anthrax Vaccine Modeling Workgroup (NIH/DHHS/UPMC); various review panels for the Department of Health and Human Services; the University of Pittsburgh Medical Center; the Center for Biosecurity in Baltimore, Maryland; and, the Homeland Security Council, Surge Capacity Workgroup. (*For more information on Dr. Yeskey and CDHAM see Section II, USU Research Centers and Programs.*)

(*See Section I, Military Unique Curriculum, of the USU Journal for additional information on the Department of Military and Emergency Medicine.*)

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Neurology - School of Medicine.

A New Department Chair.

Colonel William W. Campbell, Jr., M.D., MC, USA, Professor and Chair, USU SOM Department of Neurology, was selected as the new Chair of the USU SOM Department of Neurology, replacing Bahman Jabbari, M.D. (he had served as Chair since 1998 and retired during the past year from active duty as an Army Colonel to accept an appointment at Yale University). Dr. Campbell was chosen for the position following a nation-wide search. Prior to his selection, Dr. Campbell served as the Chief of Clinical Neurophysiology and Program Director for the Clinical Neurophysiology Fellowship Program at the Walter Reed Army Medical Center in Washington, D.C. The new Chair earned his Doctor of Medicine Degree in 1970 at the Medical College of Georgia, in Augusta. He completed his Neurology Residency, in 1976, at the Letterman Army Medical Center in San Francisco, California; and, he completed a Neuromuscular Disease and Electromyography Fellowship, in 1980, at the Medical College of Georgia. Dr. Campbell was promoted to the rank of 0-6 in October of 2004; he has more than 28 years of commissioned service, including eight and one-half years on active duty in the Air Force, followed by 16 years as an Army Reservist before returning to active duty in the Army four years ago. Dr. Campbell is a Diplomate of the American Board of Psychiatry and Neurology and the American Board of Electrodiagnostic Medicine, and a Fellow in the American Academy of Neurology and the American Association of Electrodiagnostic Medicine.

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Obstetrics and Gynecology - School of Medicine.

Individual Contributions.

Colonel Andrew J. Satin, USAF, MC, Professor and Chair, USU SOM Department of Obstetrics and Gynecology, USU SOM Class of 1986, became the first uniformed member to be appointed to the Accreditation Council for Graduate Medical Education's (ACGME) Residency Review Committee for Obstetrics and Gynecology. This twelve-member group is responsible for accreditation decisions for all Obstetrics and Gynecology Residency Programs in the United States. Dr. Satin a 1986 graduate of the USU SOM, is board-certified in Maternal-Fetal Medicine and Obstetrics and Gynecology. Dr. Satin has emerged as a leader in the use of simulation for residency training in obstetrics and gynecology. In addition to publishing numerous manuscripts, he has delivered plenary session lectures to the Council of Resident Education (CREOG) and workshops for the Association of Professors of Gynecology and Obstetrics (APGO). A nationally recognized expert in labor stimulation and labor management, Colonel Satin has authored over 120 peer-reviewed manuscripts, abstracts, and book chapters. In addition to his

duties at USU and the RRC, Dr. Satin serves as an Oral Examiner for the American Board of Obstetrics and Gynecology and was appointed to the American College of Obstetricians and Gynecologists' Committee on Practice Bulletins - Obstetrics. This group is responsible for issuing national guidelines for obstetrics practice.

Major Amy Asato, MC, USA, Assistant Professor, USU SOM Department of Obstetrics and Gynecology, serves as the Director of Clinical Clerkships. As coordinator and director for all clerkship sites, Dr. Asato has initiated simulation training and expanded and modified the role of problem-based learning (PBL) and the objective structural clinical examination (OSCE) into the curriculum. Board- certified in Obstetrics and Gynecology, Dr. Asato successfully competed for acceptance into the prestigious Solvay-APGO Scholars Program. This national program recognizes and further develops clinician educators for leadership positions within the specialty.

William Catherino, M.D., Ph.D., Assistant Professor, USU SOM Department of Obstetrics and Gynecology, recently joined the Department. Dr. Catherino completed subspecialty training in reproductive endocrinology and infertility at the National Institutes of Health/National Capital Consortium/ USU combined fellowship. Dr. Catherino serves as the Training Director for the USU Center for Health Disparities. He has over 25 publications dedicated to advancing the understanding of diseases that impact the well-being of women.

William H.J. Haffner, M.D., CAPT, USPHS (Retired), Professor, USU SOM Department of Obstetrics and Gynecology, continues to assume special assignments for the Dean of the School of Medicine, to include serving as the Chair of the Student Promotions Committee. Dr. Haffner is active in the Armed Forces District. He has served, or is currently serving, on several American College of Obstetricians and Gynecologists (ACOG) committees, including the Committee on American Indian Affairs, the Committee on Practice Bulletins - Gynecology, and the Committee on Health Care for Underserved Women. Dr. Haffner's years of service to education and gynecology was recognized with his election as President of the Association of Professors of Gynecology and Obstetrics.

Colonel Ernest G. Lockrow, MC, USA, Assistant Professor, USU SOM Department of Obstetrics and Gynecology and Director, Department of Obstetrics and Gynecology Continuing Medical Education (CME) Program, is the only gynecologist in the Department of Defense who is certified on the use of the DaVinci Robot for human surgery. He performed the first-ever laproscopic vesico-vaginal fistula repair with omental - J flap using the DaVinci Robot. Under Dr. Lockrow's leadership, the CME program has expanded to include courses in pelvic anatomy, hysteroscopy, laparoscopic surgery, urologic, and pelvic reconstructive surgery.

Colonel Christopher M. Zahn, USAF, MC, Associate Professor and Vice Chair, USU SOM Department of Obstetrics and Gynecology, succeeded Dr. Satin as the Residency Program Director of the National Capital Consortium's (NCC) Uniformed Services Residency in Obstetrics and Gynecology. Dr. Zahn directs residency training at the Walter Reed Army Medical Center, in Washington, D.C., and at the National Naval Medical Center, at Bethesda, Maryland. Certified in Obstetrics and Gynecology and Pathology, Dr. Zahn developed and directed a Gynecologic Surgical Pelvic Anatomy and Dissection Course. Dr. Zahn, a nationally recognized clinician-educator, is the only uniformed member of the Editorial Board of Obstetrics and Gynecology, the premier journal in the specialty.

(*See Section II, Military Unique Curriculum, Third Year Curriculum, for information on the Department's unique SOM clerkships.*)

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Pathology - School of Medicine.

Individual Contributions.

Robert M. Friedman, M.D. Professor and Chair, USU SOM Department of Pathology, provides nine hours of lecture in ***Pathology 2010***. He is an Instructor in ***Small Group Case Studies*** (eight hours) and an Instructor in the ***Pathology Laboratory*** (where he serves as a substitute for all other departmental instructors). Doctor Friedman is a Member of the Board of Scientific Advisors at the Armed Forces Institute of Pathology; a Lecturer in the Graduate Education Courses in the USU SOM Department of Pathology and the USU Graduate School of Nursing; and, a Special Assistant to the Director of the United States Military Cancer Institute. Doctor Friedman's research activities include a National Cancer Institute grant on *Inhibition of Human Oncogene Expression by Interferon*, a study of the mechanism of tumor differentiation induced by treatment with interferon. This year, his research has uncovered important parameters of the stimulatory effect of nuclear regulatory factor IRF-1 on cellular growth. The research funded by this grant has also studied the role of the enzyme *lysyl oxidase* on cell transformation and the relation of this effect to IRF-1. These findings appear to be of significance in the genesis and the possible treatment of cancers. His publications are on the *Deregulated Expression of Interferon Regulatory Factor* and on *Oncogene-Transformed Mouse Fibroblasts*. He has four additional manuscripts in preparation, making for a total of 270 publications in his bibliography. Dr. Friedman was honored by a reception at the United States Embassy in New Delhi for his 20 years of contributions to Indo-US Collaborative Research in the Biomedical Sciences; and, he recently participated in the signing of an agreement between USU and the Indian Armed Forces to exchange instructors and students and to carry out collaborative research projects. He was also named Elected Honorary Member of the International Society for Interferon and Cytokine Research in recognition of his outstanding scientific and administrative achievements in the field of cytokine research. Dr. Friedman serves on the Editorial Board of the Journal of Interferon and Cytokine Research; and, he is an Adjunct Professor in the Department of Pathology at Georgetown University. He serves as an *Ad Hoc* Reviewer for Nucleic Acid Research, the Journal of Virological Methods, and Analytical Biochemistry. After 24 years of dedicated leadership and service to the USU SOM Department of Pathology and USU, Doctor Robert Friedman announced, in late October of 2003, that he would step aside as Chair upon the completion of a search process for a new Department Chair. He will remain on the faculty as a Professor of Pathology with increasing roles and responsibilities in the United States Military Cancer Institute.

Colonel Richard M. Conran, MC, USA, Professor, USU SOM Department of Pathology, is a consulting pathologist to the National Naval Medical Center (NNMC) and the Department of Pediatric Pathology at the Armed Forces Institute of Pathology (AFIP). He also serves as the Course Director for the ***Pathology MSII Course***; and, he is a principal Instructor in the ***Pathology Laboratory Course*** and the ***Pathology MSII Small Group Case Studies***. As part of his collaborative efforts, he is a Lecturer in the EID Graduate Education Program on ***Fundamentals of Infectious Diseases***; he is a Lecturer in ***BioChemistry*** on ***Nutritional Disorders*** and a Lecturer in ***Histology*** on ***Clinical Correlation in Histology***.

Dr. Conran provides pathology support for the ***Squamous Cell Carcinoma of the Esophagus*** and ***Renal Cell Carcinoma Protocols*** at the National Institutes of Health and for the ***Quick Clot Protocol*** at USU. Other areas of research interest include gestational trophoblastic disease and perinatal pathology. He also has a law degree from the Washington College of Law and is a member of the Virginia State Bar due to his strong interest in legal medicine.

Sara Contente, Ph.D., Research Assistant Professor, USU SOM Department of Pathology, was appointed as Chair of the USU IACUC Committee, in March of 2004, after serving as an IACUC member since 1995. As a part of her collaborative efforts, Dr. Contente lectures for the MCB Course, ***Techniques in Cellular and Molecular Biology (MCB0801)***. Her research program focuses on the mechanism of action of the tumor suppressor, lysyl oxidase, and the regulated expression of the lysyl oxidase gene.

Mary Lou Cutler, Ph.D., Associate Professor, USU SOM Department of Pathology, taught courses for the Molecular and Cell Biology (MCB) and Pathology Graduate Education Programs; in addition, she is the Director of the new MCB Course in Signal Transduction for graduate students. (During 2004-5, Dr. Cutler was the Course Director of ***MCB 509***; she was also a Lecturer in ***MCB 508, Cell Biology***; and, she presented lectures on ***Techniques in Cell and Molecular Biology*** and ***Advanced Virology***). Currently, there are two graduate students working full time on their dissertation research under Dr. Cutler's direction; and, one student from the Pathology Program is nearing completion of her dissertation research. Dr. Cutler's research program focuses on the regulation of mammary epithelial cell differentiation. In particular, she is interested in the mechanism by which activation of the Ras pathway disrupts mammary epithelial differentiation. The Ras pathway is frequently activated by signaling from the ErbB receptors in breast tumors; activation of this pathway is characteristic of more aggressive tumors. Dr. Cutler and her staff are interested in determining which of the effector pathways activated by Ras is responsible for the block in differentiation. Her recent findings have demonstrated that activation of the Raf-Mek-Erk signal transduction pathway by the epidermal growth factor family of mitogenic peptides results in the inhibition of mammary differentiation by inhibiting Stat5, an obligate transcription factor for the expression of genes involved in lactogenesis. In addition, the activation of the Ras pathway prevents the normal down-regulation of the expression of Mek-1 and other kinases and scaffolding proteins that constitute the Raf-Mek-Erk signaling complex. The research in her laboratory is currently supported by two grants. In addition to the graduate students, there is one post-doctoral fellow and a technician working in her laboratory. The laboratory has published one paper and has submitted two manuscripts for publication in the last six months. Dr. Cutler was in the process of preparing three grant applications for submission in May and June of 2005, including a resubmission of an application for a new NIH R01 grant that received a good score, but was not funded on a previous submission. Her duties as the Associate Director for Basic Science of the United States Military Cancer Institute (USMCI) involve promoting basic science in cancer research at USU and at the other USMCI institutions. This year, the USMCI is continuing a funding program for collaborative cancer research; she prepared the funding announcement and arranged for the review of applications for collaborative grants in cancer research. These grants will be available to researchers at USU. In addition, Dr. Cutler arranged seminars for invited speakers and organized the scientific program for the USMCI Cancer Research Session at the USU Research Day. As the Associate Director for Basic Science, she serves on the USMCI Executive Committee and reports to the USMCI Committee of Scientific Advisors on basic science research. Dr. Cutler serves on two grant review committees. One is the USU Merit Review Committee and the other is a study section for the Congressionally Mandated Medical Research Breast Cancer Program. In addition, Dr. Cutler serves on the Molecular Biology Advisory Committee to the American Type Culture Collection. She also is a member of the USU Space Committee; and, she served as a member of the Search Committee for the Associate Dean

for Graduate Education and the Search Committee for the Chair of the Pathology Department. She is a lecturer in the FAES Course, ***Genetics of Cancer***; and, she serves as a member of the National Institutes of Health (NIH) Breast Cancer Think Tank.

Michael J. Daly, Ph.D., Associate Professor, USU SOM Department of Pathology, has been developing a new theory on how radiation kills cells, published in Science magazine <*http://www.sciencemag.org/cgi/content/abstract/1103185*> in November of 2004; and, his research was reviewed in detail in FEMS Microbiology Reviews, 29, pages 361-375 (2005). Specifically, Dr. Daly reported a chemical basis for radiation resistance in the bacterium *Deinococcus radiodurans*, famous for its extreme resistance to X-rays and gamma-rays, and the subject of research for 50 years. Cellular accumulation of high levels of manganese (Mn) in combination with low levels of iron (Fe) appears to be key to recovering from radiation in *Deinococcus* and other resistant organisms. In contrast, Fe-rich, Mn-poor organisms are very sensitive to radiation. Intracellular, accumulated Mn serves as a scavenger (antioxidant) of reactive oxygen species (ROS)(superoxide and hydrogen peroxide) (oxidative stress), with Mn cycling between the divalent and trivalent states. Evidence supports that the ratio of Mn and Fe in a cell determines the relative abundance of different ROS produced during and after irradiation since the presence of Mn during water radiolysis favors superoxide-scavenging and oxygen production without intermediate release of hydroxyl radicals, whereas the presence of Fe favors the production of hydroxyl radicals and oxygen without superoxide-scavenging. Dr. Daly has presented the case that Fe-rich cells with weak anti-oxidant systems are killed by superoxide and related ROS induced by radiation. Thus, intervention to promote recovery from radiation injury might be possible using agents that remove superoxide; the Science paper points to potential practical applications, including environmental biotechnology. For example, it might be possible to substantially increase the environmental resistance characteristics of bacteria used for clean-up of radioactive wastes. Development of treatments to protect cells from radiation injury are also important to cancer therapies, and importantly, the superoxide-scavenger, Tempol, has recently been shown to be highly effective as a radioprotector in humans. His laboratory has been dedicated to the genetics of radiation resistance since 1992, and to engineering *Deinococcus* for clean-up of Cold War radioactive wastes since 1997. This work is being featured as part of a National Geographic documentary to be aired in the Summer of 2005. The Daly Laboratory Website is at <*http://www.usuhs.mil/pat/deinococcus/index_20.htm*>.

Gabriela S. Dveksler, Ph.D., Associate Professor, USU SOM Department of Pathology, contributed to her Department and the University during the past year. Dr. Dveksler's laboratory works on the regulation of the maternal immune system during pregnancy by placentally-made glycoproteins in humans and rodents. The capacity of these proteins to regulate the innate and adaptive immune system has led to a productive collaboration with a research group working on multiple sclerosis. Her laboratory has published an average of three papers per year in peer-reviewed journals. Dr. Dveksler serves as a members of the USU Biosafety Committee and is a member of the MCB Program Admissions Committee. Dr. Dveksler was selected by the National Institutes of Health (NIH) to serve as a member of the Pregnancy and Neonatology Study Section, which is part of the National Institute of Child Health and Human Development. In addition to her service to USU and the NIH, she served as the Editor for the first and second editions of PCR Primer: A Laboratory Manual, published by Cold Spring Harbor Laboratory Press. Dr. Dveksler is the Course Director for ***Techniques in Molecular and Cellular Biology (MCB801)*** at USU; and, ***Trac 9*** at FAES, NIH. She is also serving on three Thesis Committees for Pathology, Neuroscience, and Molecular and Cell Biology Graduate Students; and, she serves as a mentor for two Molecular and Cell Biology Graduate Students. She is the principal investigator in a 5-year grant awarded by the NIAID at NIH and has recently submitted her competitive renewal of a 5-year grant to the National Institute of Child Health and Human Development.

Philip M. Grimley, M.D. Professor, USU SOM Department of Pathology, serves as a ***Pathology Core Course*** Lecturer on Anemias, Leukemias and Lymphomas (8 hours). He is a Primary Instructor for 28 ***Pathology Laboratory Sessions*** with groups of 24 students (56 contact hours); and, he serves as an Instructor in small group cases with 8 students. In ***Histology for Pathologists***, he lectures on the Hematopoietic and Cardiovascular Systems; in the ***Pathology for EID Program***, he lectures on Tissue Pathology of Virus Infections (with clinical correlations); in the ***Biowarfare Course***, he lectures on Insect Borne Virus Pathogens. In the ***Pathology Graduate Courses***, he lectures on Leukemia Pathogenesis (CML, CLL); and, in the ***Interferon Course***, he lectures on IFN Antiproliferative/Antiviral Mechanisms (molecular signals). Dr. Grimley has a secondary appointment as a Professor in Molecular Cell Biology. In the ***Molecular and Cell Biology Course (MCB508 Core Course)***, he lectures on (1) The Cell Cycle (2 hours) and Mechanisms of Apoptosis (2 hours). Dr. Grimley is a member of the Commission on Laboratory Accreditation of the College of American Pathologists (CAP) and serves as the State Commissioner for Maryland with responsibilities related to the certification of more than 50 hospital and private laboratories. His CAP participation contributes to the certification of more than six United States Army or United States Navy clinical or research laboratories. Dr. Grimley is a member of Study Sections for Breast and Prostate Cancer Research Programs sponsored by the Department of Defense. He is an Adjunct Professor at the University of Maryland; and, he participates in seminars and works with graduate students. He is an active member of the United States Military Cancer Institute (USMCI), serves on the USMCI Tissue Committee, and participates in USMCI symposia. As a member of the USU Patent Review Committee, he participates in monthly reviews of patent applications for the Henry M. Jackson Foundation for Military Medicine (HMJF). As a member of the USU Promotions Committee, he conducts quarterly reviews of faculty appointments and promotions. He is an *ad hoc* Reviewer for the Journal of Immunology and the Journal of Biochemistry. Dr. Grimley's research is focused on *Therapeutic Modulation of Apoptosis*; this work aims to improve the efficacy of chemotherapy for malignant lymphomas and refractory epithelial cancers. He has obtained funding for studies of refractory ovarian cancers from the USMCI and has two United States patents related to novel strategies for chemotherapy. Efforts to translate this work into clinical practice include a cooperative research & development agreement sponsored by the HMJF with a local pharmaceutical firm.

Elliott Kagen, M.D., Professor, USU SOM Department of Pathology, provides three lectures and 33 laboratory instruction sessions in the ***MSII General and Systemic Pathology Course*** with approximately 69 student contact hours. Dr. Kagen provides extensive lectures during the school year: 1) he lectures for the Pathology Graduate Student Program on *Oxidants and Acute Respiratory Distress Syndrome* (Topics in ***Pathogenesis Graduate Course*** - approximately two student contact hours); 2) he lectures in the Pathology Graduate Student Program on *Mitogen-Activated Protein Kinases in Lung Injury* (Topics in ***Pathogenesis Graduate Course*** - approximately one student contact hour); 3) he provides the ***Lecture and Microscope Session*** to the Emerging Infectious Disease Graduate Program on *Lung Infections*; 4) he lectures for the ***USU Occupational and Environmental Medicine Residency Program (PMO542)*** on *Occupational Carcinogenesis* - approximately two student contact hours; 5) he lectures on *Bioregulators as Instruments of Terror* in the Johns Hopkins University Graduate Course, entitled: ***BioTerrorism, Science and Policy: The International Scientific and Diplomatic Challenge of the 21st Century***; and, 6) he lectures in the ***Biotechnology Program*** of the Zanvyl Kragler School of Arts and Sciences, John Hopkins University, on *Scientific and Medical Aspects of Bioterrorism and Biowarfare*; *Scientists and Health care Community Preparing for the Challenge of Bioterrorism*; and, *Filoviruses as Possible Bioterrorism Agents*. In addition, Dr. Kagan serves as a regular Reviewer of Manuscripts for the American Journal of Respiratory and Critical Care Medicine, the American Journal of Respiratory Cell and Molecular Biology, Experimental Lung Research, and Environmental Health Perspectives. Dr. Kagen has served as an *ad hoc* Reviewer for the National Institutes of Health (NIH) Chemical Pathology Study Section, Oncological Sciences Integrated

Review Group, in Washington D.C.; and as an *ad hoc* Member of the NIH Lung Biology and Pathology Study Section in Washington, D.C., since May of 2002. Since February of 2002, he has been a member of the External Advisory Committee, Xavier University/Tulane University NIEHS-funded ARCH Research Program; and, he has served as an *ad hoc* Reviewer for the Cooperative Grants Program of the United States Civilian Research and Development Foundation (CRDF), since July of 2001. In addition, Dr. Kagen has served as an *ad hoc* Reviewer for the Veterans Administration Merit Review Board, since March of 1987. Dr. Kagen is the Principal Investigator on an exploratory NIH research grant: *Biodefense Against an Aerosolized Ebola Threat*, which is funded from July 1, 2003, through June 31, 2005 (his application received a Priority Score of 1.26 by the Lung Biology and Pathology Study Section in February of 2003, purportedly the best-ranked application of all proposals submitted on that round to this particular Study Section).

Radha K. Maheshwari, Ph.D., Professor, USU SOM Department of Pathology, actively serves as: a member of an NIH Study Section; a member the USU Graduate Education Committee; a Program Director in the USU Graduate Education Program; as a member of the Henry M. Jackson Foundation Committee for Graduate Fellowship; a member of the University BSL-3 Committee; a member of the United States Military Cancer Research Institute (USMCI); a faculty member in the USU SOM Molecular and Cell Biology and Emerging Infectious Diseases Graduate Education Programs; a member of the Graduate Students Thesis Committee; a mentor to area high school students; a coordinator of the Indo-US Activities at USU; and, as an Adjunct Professor at the Birla Institute of Technology and Science located in Pilani, India. Since 2002, Dr. Maheshwari has lectured in two courses on ***Interferons*** and ***Topics in Pathogenesis***. He also lectures in the ***Emerging Infectious Diseases Course*** and participates in the ***Bioterrorism and BioDefense Course***; and, he continues to mentor both Graduate Education Students and Post-Doctoral Fellows. Dr. Maheshwari has been repeatedly requested to serve as an Invited Speaker at the Industrial Toxicology Research Center in Lucknow, India; he also continues to serve as an Invited Speaker and to chair sessions at the Birla Institute of Technology and Science in Pilani, India. Significantly, in January of 2003, Doctor Maheshwari was recognized as the Organizer of 20 Years of INDO-USU Collaborative Efforts in Research and Education; and, he edited a *Summary of 20 Years of Collaborations*. Dr. Maheshwari continues to serve as an Invited Speaker at the Army Hospital in New Delhi, India.

Clifford M. Snapper, M.D., Professor, USU SOM Department of Pathology, continued as a Lecturer in the ***MSII Pathology Course***, as well as graduate courses in Pathology, the Emerging and Infectious Diseases Program, and the Molecular and Cell Biology Program. He was appointed to the Search Committee for the new Chair for the Department of Pathology. Dr. Snapper also continued to serve on the Executive Committee of the Molecular and Cell Biology Program. In addition, Dr. Snapper established and has served as the Director of the Institute for Vaccine Research (IVR), at USU. He was able to do so with the support of the USU SOM Research and Education Endowment Fund. The IVR, centered in the Department of Pathology, is an interdepartmental effort, including the Department of Pediatrics, for the development of novel, universal strategies for enhancing antibody production to poorly immunogenic proteins, peptides, and polysaccharides. ***These antigens serve as vaccine targets for many bacterial and viral pathogens of clinical relevance to both military and civilian populations.*** In order to facilitate commercial development of any promising approaches and/or products arising from the basic and pre-clinical studies conducted at the IVR, a Cooperative Research and Development Agreement (CRADA) was established between USU, Biosynexus, Inc., a Rockville, Maryland-based biotechnology company specializing in anti-bacterial immunity, and the Henry M. Jackson Foundation for the Advancement of Military Medicine (HMJF). The IVR has three major projects: 1) development of a novel protein carrier for protein-polysaccharide conjugate vaccines; 2) development of a novel DNA-RNA adjuvant for stimulating humoral and cell-

mediated immunity; and, 3) evaluation of a novel reagent for preventing bacterial septic shock. Dr. Snapper's laboratory has continued its studies on the mechanisms underlying the antibody response to *Streptococcus pneumoniae* in vivo. These studies include the role of dendritic cells, T cells, cytokines, co-stimulatory molecules, suppressor mechanisms, and Toll-like receptors. The mechanisms, underlying the induction of antibody isotype responses specific for both proteins and polysaccharides expressed by the bacteria, are compared and contrasted. In addition to revealing novel basic immunologic processes, these studies have implications for the design and development of vaccines, and other immunotherapies directed against extracellular bacteria. In light of the quality of his peer-reviewed publications, Dr. Snapper was selected to the Editorial Board of the journal, Infection and Immunity; and, he has continued to review manuscripts for The Journal of Experimental Medicine, The Journal of Immunology, Infection and Immunity, and Vaccine.

Colonel J. Thomas Stocker, MC, USA, Professor, USU SOM Department of Pathology, serves as a Lecturer in the ***MSII Pathology Course***; he also is an Instructor in both the ***MSII Laboratory Course*** and the ***MSII Small Group Sessions***. As further examples of his collaborative support, Dr. Stocker was a Lecturer in the following: the ***Histology Course***; the ***Pediatric Seminars***; the ***CPC Conferences*** at both the Walter Reed Army Medical Center (WRAMC) and the National Naval Medical Center (NNMC); the ***Pathology Seminars*** at WRAMC and NNMC; the ***Public Health Course*** at USU; and, ***Autopsy*** at NNMC. Dr. Stocker has also served as a consultant for Pediatric and Pulmonary Pathology at the Armed Forces Institute of Pathology (AFIP); and, as a consultant for the Department of Defense on Legal Issues and Pediatric Pathology. He is also an Adjunct Professor of Pathology at the Georgetown University Medical School and Past President of the Society for Pediatric Pathology. His major interests include Pediatric Pulmonary Pathology, including acquired and congenital disorders such as Bronchopulmonary Dysplasia and Chronic Lung Disease of Premature Infants, Infantile Lobar Emphysema, Congenital Pulmonary Airway Malformation, and Sequestrations of the Lung.

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Pediatrics - School of Medicine.

***Departmental Activities*.**

The Department of Pediatrics Education Section Continues to Offer the Military Medical Humanitarian Assistance Course (MMHAC) to Uniformed Primary Care Providers from Around the World. Under the direction of its **Executive Director, Colonel Jeffrey Lee Longacre, MC, USA, Assistant Professor, USU SOM Department of Pediatrics,** this course provides military health care workers with the knowledge and skills essential for the care of civilian populations during complex humanitarian crises. The two-day course emphasizes the perspective of population health and vulnerable populations in an austere environment of natural or man-made disasters. Unique interactive scenarios, taken from actual experiences of the instructors, bring attention to the strengths and weaknesses of the myriad of responders to any crisis. *The course is sponsored by the USU Department of Pediatrics and accredited for continuing medical education (CME) credit by the USU Office of Continuing Education for Health Professionals*.

Pediatrics Department Establishes the James W. Bass Visiting Professorship. On September 23, 2004, the USU Department of Pediatrics sponsored the inaugural James W. Bass Visiting Professorship. The intent of the Bass Visiting Professorship is to carry forward and honor the vision of the late Dr. Bass (Colonel, Medical Corps, United States Army), the first Department Chair for Pediatrics at USU, through advancing military pediatric education and fostering collaboration among pediatric healthcare providers. As a master clinician, superb educator, and revered scholar, Dr. Bass was a pioneer in military pediatrics and was recognized as one of the pillars upon which the military medical profession was built. His vision and achievements in military pediatrics created the foundation upon which USU's excellence in academics and research continues to flourish. As an annual tribute to Dr. Bass, a distinguished pediatric clinician, scientist, or educator will be invited to one of the Air Force, Army, or Navy Pediatric Training Sites as a Visiting Professor. The host site will rotate among the Pediatric Training Programs in all three Services to foster its proliferation as the premier tribute to a legend in military pediatrics and academic medicine. The Visiting Professor will provide educational forums at the host site to include, but not be limited to, pediatric grand rounds, in-patient clinical rounds, and clinical or research seminars for medical students, residents, fellows, and staff physicians. Following a rigorous review process, the First Annual James W. Bass Visiting Professorship was awarded to Colonel Errol R. Alden, MC, USA (Retired), Executive Director, American Academy of Pediatrics. Dr. Alden is also a past Chair of the USU Pediatrics Department. Dr. Alden was the featured speaker at Pediatric Grand Rounds, discussing *The State of Pediatrics in the United States: A Growing Field, A Changing Practice*. He also participated in a research symposium that included presentations by Pediatric Fellows from the five USU Pediatric Subspecialty Fellowships and an evening dinner-seminar program that included recognition of the long history of dedicated and committed medical educators and trainees who were instrumental in developing the quality Pediatric Training Programs that exist today.

Individual Contributions.

Ildy M. Katona, M.D., Professor of Pediatrics and Medicine, Chair, USU SOM Department of Pediatrics, retired from 23 years of active duty as a Navy Captain, in October of 2003. Following a national search, on November 14, 2003, the Dean of the SOM announced that Doctor Katona had been selected to serve as the Chair of the USU SOM Department of Pediatrics. During the past year, Doctor Katona has served in the following positions of recognition: as a Clinical Guest Scientist, Pediatric Rheumatology, National Institute of Arthritis, Musculoskeletal, and Skin Diseases, National Institutes of Health; a Member of the Residency Review Committee (Pediatrics) of the Accreditation Council of Graduate Medical Education; an Associate Editor for the Journal of Immunology; and, a Visiting Professor and Rheumatology Grand Rounds Speaker, presenting *The Spectrum of Streptococcal-Related Diseases: Rheumatic Fever and Beyond* at the Hospital for Special Surgery and Rockefeller University, New York, New York.

Kathleen B. Madden, Ph.D., Research Assistant Professor, is a Co-Investigator on a five-year, $1.25 million National Institutes of Health (NIH) grant awarded to **Terez Shea-Donohue, Ph.D., Research Professor of Medicine, USU, and Research Physiologist, United States Department of Agriculture (USDA)**, entitled, *GI Nematodes and Gut Functional Responses to Inflammation*. Doctor Madden's primary research interests are in the field of immuno-parasitology, with special emphasis on cytokine regulation of the host's response to infection with gastrointestinal nematodes. Doctor Madden works in collaboration with **Ildy M. Katona, M.D., Professor of Pediatrics and Medicine, and Chair, USU SOM Department**

of Pediatrics, delineating cytokine regulation of mucosal mast cell hyperplasia; and, she also works with Doctor Terez Shea-Donohue investigating neuroimmune regulation of gut epithelial cell function.

Merrily P.M. Poth, M.D., Professor, USU SOM Department of Pediatrics, was responsible for on-going contributions, during the past year. She works on a research project, *Physiologic and Endocrine Correlates of Overweight and Obesity in African Americans and Caucasians*, as a co-investigator with **Patricia A. Deuster, Ph.D., Professor, USU SOM Department of Military and Emergency Medicine,** Principal Investigator; the project was funded by the Department of Defense Peer Review Projects, for approximately $240,000 per year for four years, with funding beginning in October of 2003.

(*See Section II, Military Unique Curriculum, Third Year Curriculum, for additional information on the third-year clerkships sponsored by the Department of Pediatrics.*)

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Pharmacology - School of Medicine.

Departmental Activities.

Importance and Significance of Research Programs in the Department of Pharmacology. The Department of Pharmacology's areas of research are important in the development of the discipline of pharmacology and for biomedical education. The Department's research strengths are in the major areas of molecular and cellular neuropharmacology and signal transduction mechanisms. The Department expects these areas will produce many valuable insights and are most likely to prove to be fruitful topics for continued research concentration. ***These areas also have implications for military medicine.*** Extreme and rapid changes in the environment are a frequent feature on the battlefield. Department studies explore the molecular, cellular, and systems implications of changes in the chemical or physical environment of an organism. These basic studies on the mechanisms underlying cellular adaptations may lead to ways of reducing the negative consequences of such adaptations while retaining the valuable features of adaptations enhancing survival.

Individual Research in the areas of Molecular and Cellular Neuropharmacology and Signal Transduction Mechanisms.

Suzanne B. Bausch, Ph.D., Assistant Professor, USU SOM Department of Pharmacology, continues her studies on *Synaptic Alterations in Epilepsy*. Doctor Bausch's research is made possible by funding from the National Institutes of Health (NIH), *Axonal Sprouting of GABAergic Neurons in Epileptogenesis*, the Epilepsy Foundation, *Activity and NMDA Receptor Activation in Epileptogenesis*, and the Department of Defense Brain and Spinal Cord Injury Program (DBSCIP), *Glutamate Receptors in Epileptogenesis*.

Beata Buzas, Ph.D., Research Assistant Professor, along with Doctor Brian Cox, addresses studies on the *Regulation of Opioid Systems in Pain, Injury, and Drug Tolerance*. Doctor Buzas research is made possible by funding from the Department of Defense Brain and Spinal Cord Injury Program (DBSCIP), *Neurochemical m/Medicators in Penetrating Brain Injury*, and the Defense/Veterans Head Injury Program, *Opioid Peptides and Oxidative Stress*.

Thomas E. Cote, Ph.D., Associate Professor, USU SOM Department of Pharmacology, focuses his studies on *RGS Proteins and Regulation of Opioid Receptor Signaling*. In the area of Signal Transduction Mechanisms, Doctor Cote studies *RGS Proteins and Regulation of Opioid Receptor Signaling*.

Brian M. Cox, Ph.D., Professor and Chair, USU SOM Department of Pharmacology, along with Doctor Buzas, addresses studies on the *Regulation of Opioid Systems in Pain, Injury, and Drug Tolerance*. Doctor Cox's research is made possible through funding from the National Institutes of Health (NIH).

Jeffrey M. Harmon, Ph.D., Professor, USU SOM Department of Pharmacology, continues his studies on *Regulation of Glucocorticoid Receptor Expression*.

J. Brian McCarthy, Ph.D., Assistant Professor, USU SOM Department of Pharmacology, focuses on both the *Mechanism of Structural Plasticity in the Brain* and the *Regulation of Synaptic Receptor Targeting*. Doctor McCarthy's research on the *Development of Dendritic Protein Synthetic Components*, is made possible through funding from the National Institutes of Health.

Aviva J. Symes, Ph.D., Associate Professor, USU SOM Department of Pharmacology, focuses his research on *Cytokine Regulation of Neuronal Gene Expression*. The Department of Defense Brain and Spinal Cord Injury Program (DBSCIP) funds Doctor Symes's research on *Molecular Mechanisms of TGF-beta Signaling in Glial Scar Formation after CNS Injury*. The National Institutes of Health (NIH) funds his research on *Cytokine Regulation of VIP Gene Expression*; and, the Christopher Reeves Paralysis Foundation funds his study on *The Role of Smad3 in Glial Scar Formation After Spinal Cord Injury*.

The research programs of **Doctors Bausch, Cote, Cox, Harmon, McCarthy** and **Symes** address issues relating to adaptations of the nervous system following changes in activity associated with an altered cellular environment or with application of external stimuli, injury, or other stresses. Doctor Bausch's electrophysiology laboratory examines various aspects of synaptic adaptation following seizures. Doctor Bausch's laboratory is examining structural adaptations in GABA and Glutamate synapses in the hippocampus, following repeated episodes of seizure activity. Doctor J. Brian McCarthy's laboratory investigates the targeting of metabotropic glutamate receptors, identifies sorting signals, investigates the hormonal regulation of structural modification in the nervous system, and explores the role of local protein synthesis in dendrites toward synaptogenesis in the hippocampus.

The molecular mechanisms underlying neural injury are also studied in the laboratories of Doctors Aviva Symes and Brian Cox. The Symes and Cox laboratories examine the release of cytokines in response

to neural injury and their roles in the regulation of expression of neuropeptides. Doctor Symes's laboratory explores factors regulating the expression of vaso-active intestinal polypeptide (VIP) in the brain resulting from neural injury. Doctor Cox's laboratory studies the expression of endogenous opioids and their relevance to the control of pain and inflammation following injury to the nervous system. The Cox and Cote laboratories are also studying adaptations in opioid peptide and receptor function related to chronic drug exposure.

Impaired function of neurotrophins and oxidative injury associated with hyperglycemia have been demonstrated. Doctor Harmon is studying the function of glucocorticoid receptors in the central nervous system. Doctor Reid examines factors controlling differentiation of neural precursor cells during neural development. Diseases that affect nerve cells often result in permanent, life-altering disabilities. More than 5,000,000 Americans are currently afflicted by a neurodegenerative disorder. In peacetime, over 8,000 Americans with traumatic brain injury (TBI) are admitted to military and veterans hospitals. ***In combat, traumatic brain injury accounts for at least 14 percent of surviving casualties and a disproportionate amount of acute and long-term combat casualty care resources. Understanding the genes that control neuronal generation and specification in the central nervous system would likely figure prominently in treatments aimed at replacing damaged nerve cells.***

These research programs relate to issues of critical importance to health care in a military environment. Seizure generation, impairment of learning and/or memory, and neurodegeneration are frequent consequences of accidental and battlefield neural injuries. Improved understanding of these events should lead to more effective therapies. These studies can be of great benefit to military personnel who are at increased risk of sustaining a brain injury, during the performance of their duties. Defining the mechanisms, that control brain development and brain formation, is critical to our understanding of normal developmental processes and may be a key to treating Alzheimer's and Parkinson's Disease. Collectively, these studies of adaptations of the nervous system, following changes in the neuronal environment, indicate the wide range of adaptive processes, that can occur in the nervous system, and point the way to potential novel therapies.

Doctors Harmon, Symes, and Cote are actively involved in addressing aspects of the function of critical cellular transduction systems. Doctor Harmon's laboratory is exploring the role of abnormalities in glucocorticoid receptor expression and/or function in impaired function of the hypothalamic-pituitary adrenal axis and in resistance to steroid therapy in cancer.

Doctor Symes is exploring the control of gene transcription in the nervous system by cytokines. These studies are beginning to elucidate fundamental changes in neural function that are induced by enhanced cytokine expression in neural injury.

Doctor Cote studies the role of GTP-binding proteins (G proteins) that mediate the actions of a very large number of neurotransmitters and hormones utilizing G protein coupled receptors (GPCR). Understanding the role of a novel family of G protein regulator molecules may lead to new understanding of the regulation of cell function by GPCR in general. ***These studies also have specific application to studies of tolerance and dependence to opiate drugs*** being studied in the laboratories of Doctors Cote and Cox.

These studies have important implication for the understanding of regulators of biologic functions at the molecular, cellular, and biological systems levels. ***Individual projects provide insight into the adaptive responses of the nervous system, the roles of glucocorticoids in post-traumatic stress disorders, and on cell communication and cell death in relation to the treatment of some cancers.***

The faculty members of Pharmacology consistently publish in peer-reviewed journals, serve as invited speakers at national and international meetings, and contribute substantial professional service at area High Schools, on boards of professional associations and societies, and as mentors and consultants in Summer Research Internship in Biological Sciences Programs.

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Preventive Medicine and Biometrics - School of Medicine.

***Departmental Activities*.**

The Division of Aerospace Medicine has been providing course work in the area of Aviation Physiology for the past five years as a specialty track in the Master of Public Health Program offered by the Department of Preventive Medicine and Biometrics. In addition to ***Aerospace Operational Physiology I*** and ***Aerospace Operational Physiology II***, ***Human Factors in Aviation***, and ***Introduction to Risk Communication***, two electives are selected from among the following: *Special Topics in Aerospace Medicine*; *Aerospace Medicine in the Modern Age*; *Aerospace Exercise Physiology*; *Aerospace Performance & Health*; *Joint Medical Operations and Humanitarian Assistance*; and, *Health Effects of Ionizing/Non-Ionizing Radiation*. This course of study prepares students not only for successful negotiation of the Aerospace Physiology Society's Board Certification Process, but also for a career in the military as an Aerospace Physiologist. Since 1999, nine students have completed the program and three students have audited it. With an additional physiologist expected from the Air Force in 2005, further expansion of offerings will continue.

Division of Environmental and Occupational Health*.** The Environmental and Occupational Health (EOH) Division is responsible for the programs leading to the Ph.D. in Environmental Health Science as well as the Environmental and Occupational Health and Health Physics Master of Science in Public Health (MSPH) Degrees. The first PH.D. in Environmental Health Science was granted in May of 2003. Two active duty Naval officers are currently enrolled in the Ph.D. Program; two active duty officers (1 Navy, 1 Army) will begin this Ph.D. Program in August of 2005. The Master of Science in Public Health (MSPH) Program has graduated eight degree candidates between 2000 and April of 2005. Thirteen Army, Navy, and Air Force officers are currently enrolled in the Environmental and Occupational Health and the Health Physics specialties in the MSPH Program; two of these students are expected to graduate in 2005. The students and program faculty work closely with the Services and other Federal and international organizations to identify and address current needs for operational forces and emergency responders. The EOH faculty continue to provide support for the United States Marine Corps Chemical and Biological Incident Response Force (CBIRF), which includes formal classroom and laboratory training in gas chromatography/mass spectrometry. The support also provides CBIRF with continuing field-training experience and technical expertise during live agent training exercises and during times of incident response. The Division's role in military relevant research has rapidly expanded. ***Collaborative efforts involving rapid field detection of chemical warfare agents have been established with **the United States Marine Corps**, Marine Corps Systems Command, CBIRF; **the United States Army**, Soldier Biological Chemical Command, Medical Research Institute for Chemical Defense, Center for Environmental Health Research; **the Federal Bureau of Investigation**; and, **internationally** with the Defence Research and Development Canada - Suffield, and the DSO Laboratory Singapore.

The Division of Epidemiology & Biostatistics. The Division of Epidemiology and Biostatistics had a number of major accomplishments in the areas of teaching and research, during the past year, despite a shortage of personnel. **Colonel Robert J. Lipnick, ScD, MS, USA, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics and Director, Epidemiology and Biostatistics Division,** served as ***Course Director for Introduction to Epidemiology and Epidemiologic Methods***. He also deployed to Algeria, in April of 2004, as a Course Co-Director and Lecturer in support of the DoD Expanded International Military Education and Training Program. **Ann I. Scher, Ph.D., Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics,** taught ***Advanced Epidemiologic Methods***, in the Spring of 2004. Her research focus is on the Epidemiology of Chronic Pain Disorders. She recently published articles in the Journal of Neurology on caffeine and chronic headache and on the role of cardiovascular risk factors and migraine headache. She presented at the American Neurological Association Annual Meeting on a gene association study. **CAPT David Trump, MD, MPH, MC, USN, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics (PMB), and Director, SOM Education Programs for the Department of PMB,** continued to lead PMB's efforts to web-enhance learning and assessment in the SOM PMB curriculum. He also led a significant effort to assess the competencies expected of PMB graduates against the Core Competencies for Public Health Professionals developed by the Council on Linkages Between Academia and Public Health Practice. **Dechang Chen, Ph.D., Assistant Professor, USU SOM Department of PMB,** served as ***Course Director for Biostatistics II***. He continued his very active research program in microarray and spatial data analyses funded, in part, by a National Science Foundation grant. **Tzu-Cheg Kao, Ph.D., Professor, USU SOM Department of PMB,** continued to serve as ***Course Director for Biostatistics III*** and as a biostatistical consultant on a number of on-going research efforts. He was elected as a Fellow of the American College of Epidemiology and appointed as a member of the United States Military Cancer Institute Scientific Review Committee. **Lieutenant Colonel Michael D. Lewis, MPH, MC, USA, Assistant Professor, USU SOM Department of PMB,** joined the division in August of 2004; and, he has taken over the responsibility for teaching epidemiology for the first-year medical students. He is actively engaged in researching the epidemiology of scrub typus in the Maldives; and, he recently had an article published concerning an outbreak of typhoid fever in Nepal.

The Division of Tropical Public Health. In the Division of Tropical Public Health, **Donald R. Roberts, Ph.D., Professor, Professor USU SOM Department of Preventive Medicine and Biometrics,** continues several lines of funded research, including a National Institutes of Health/National Science Foundation research program, in Belize, on assessing the impact of anthropogenic environmental change on malaria and malaria vector ecology. A NASA-funded program to apply geographic information systems (GIS) and remote sensing technologies to the study of vector-borne diseases is ending, in 2005. A National Institute of Health (NIH)-funded program to screen experimental chemicals for use in malaria control is now in its second of five years of funding.

The Occupational and Environmental Medicine Residency Advisory Committee. Doctor William N. Yang serves as the Chair of the Occupational and Environmental Medicine Residency Advisory Committee (OEMRAC). This residency is one of 65 physician training programs in the National Capital Consortium (NCC). Doctor Yang is employed by the Emory Clinic, in Atlanta, Georgia, and serves primarily with Coca Cola Inc. providing Occupational Medicine clinical training in Atlanta and consultative services worldwide for Coca Cola, Inc. He was invited to speak at an International Meeting of the American College of Occupational and Environmental Medicine on water sources and bioterrorism, in Kansas City, Missouri, in May of 2005. Doctor Yang will continue to oversee two meetings per year of the OEMRAC, which provides oversight and guidance to the residency staff. The OEM Program had six

graduates in June of 2004: three Army officers; and, three Navy officers. During the Summer of 2004, all six graduates were recommended to the American Board of Preventive Medicine (ABPM) as being ready to be considered for eligibility for taking the Board Examination in the ABPM Specialty Area of Occupational and Environmental Medicine, in November of 2004, with results available, in early 2005.

Individual Contributions.

Deborah C. Girasek, MPH, Ph.D., Associate Professor, USU SOM Department of Preventive Medicine and Biometrics, also serves as the Director, Division of Social and Behavioral Sciences; and, Dr. Girasek was promoted to Associate Professor during the past year. This year was also the first year of her NIH-funded investigation into *Patterns of Alcohol Use Among Airline Passengers*. Dr. Girasek co-authored a book chapter on *Home Injuries* for a text that will be published by the American Public Health Association. She was also invited to write a chapter on *Risk Communication* that will be included in Jossey Bass' forthcoming, Handbook of Injury Prevention. Dr. Girasek was the second speaker invited to present a seminar on the *Safety Matters Series*, a program of the Safe USA Partnership Council. Safe USA is a partnership of public agencies and private organizations that are dedicated to advancing injury prevention nationally. The students in Dr. Girasek's ***Program Planning and Development Course*** conducted a multifaceted needs assessment in support of Infection Control efforts at the National Navy Medical Center's Neonatatal Intensive Care Unit.

Richard C. Palmer, Jr., DrPH, MPH, Assistant Professor, USU SOM Department of Preventive Medicine and Biometrics, was selected as an active member of the United States Military Cancer Institute (USMCI). Dr. Palmer will be leading investigations that will focus on cancer prevention and control within the Military Health System. In the Fall of 2004, Dr. Palmer was named a Cancer, Culture, and Literacy Fellow and was invited to participate in a week-long workshop that examined the role of culture and literacy on cancer outcomes. Dr. Palmer also submitted a Concept Award proposal entitled, *Exploration of Social Contextual Factors that Influence Breast Cancer Disparity*, to the Congressionally Directed Medical Research Programs. This grant will attempt to identify why certain groups of women delay in having regular mammograms.

(*See Section II, RESEARCH CENTERS AND PROGRAMS, The USU School of Medicine Department of Preventive Medicine and Biometrics, Graduate Education in Preventive Medicine and Public Health, and the Centers for Preventive Medicine and Public Health, and Section IV, for additional information on the Department.*)

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Psychiatry - School of Medicine.

Center for the Study of Traumatic Stress - Faculty Contributions.

Robert J. Ursano, MD., Professor and Chair, USU SOM Department of Psychiatry, Director, USU Center for the Study of Traumatic Stress (CSTS), chaired the American Psychiatric Association Work Group on Acute Stress Disorder and Post Traumatic Stress, which published the 13th APA practice guideline, ***Practice Guideline for the Treatment of Patients with Acute Stress Disorder and Posttraumatic Stress Disorder***, in November of 2004. During an interview with Psychiatric News, Dr. Ursano noted that the guideline is built from the best evidence-based and clinical-practice knowledge that one could ever imagine assembling. The work group reviewed hundreds of articles and research on posttraumatic stress disorder and acute stress disorder in order to publish the 13th APA practice guideline. Dr. Ursano and his CSTS faculty published numerous articles and chapters in peer-reviewed publications throughout the past year.

Colonel Charles C. Engel, Jr., MC, USA, Associate Professor, USU SOM Department of Psychiatry, Director, Center for Deployment Health and Assistant Chair for Research, is studying improving behavioral and rehabilitative elements of primary care, particularly in the occupational health care setting. Doctor Engel has multiple projects focusing on medically unexplained physical symptoms in the veteran population, primary care aspects of environmental risk communication, and evidence-based clinical practice guideline development and implementation. His research is funded by the National Institutes of Health, the Centers for Disease Control and Prevention, the Department of Defense, and the Department of Veterans Affairs. Dr. Engel published 13 articles and book chapters in peer-reviewed publications, during 2004.

Carol S. Fullerton, Ph.D., Research Associate Professor, USU SOM Department of Psychiatry, Scientific Director of the Center for the Study of Traumatic Stress (CSTS), and Dr. Ursano published Bioterrorism: Psychological and Public Health Interventions, with the Cambridge University Press, London, in 2004 (recently identified for translation into Japanese in June of 2005). This publication adds to the series on Trauma and Terrrorism published, during 2003: Trauma and Disaster Responses and Management, American Psychiatric Publishing Inc., Washington, D.C.; and, Terrorism and Disaster: Individual and Community Responses to Extraordinary Events, Cambridge University Press, London. A new text on Disaster Psychiatry is underway and projected to be published in 2006. In September of 2004, Dr. Fullerton's work, *Acute Stress Disorder, Post Traumatic Stress Disorder, and Depression in Disaster or Rescue Workers*, was the lead article in the American Journal of Psychiatry.

CAPT Thomas Grieger, MC, USN, USU SOM Class of 1987, Associate Professor, USU SOM Department of Psychiatry, Assistant Chair for Research and Assistant Chair of Graduate Medical Education, is conducting surveillance of psychiatric problems among battle injured soldiers treated at the Walter Reed Army Medical Center (WRAMC), in Washington, D.C. These soldiers receive a psychiatric evaluation while in the hospital and follow-up evaluations three and six months after discharge. Preliminary findings show highly variable courses of post traumatic stress disorder (PTSD) and depression in this population. He is actively collecting data on the psychological effects on health care providers at the Naval Medical Center in San Diego, California, with respect to their deployments to Iraq and Afghanistan;

and, he is embarking on a research project that will examine the effects of working with severely injured and disfigured personnel on the health care providers at the National Naval Medical Center in Bethesda, Maryland, and at WRAMC. Dr. Grieger has continued to analyze findings from his surveillance of the Pentagon staff following the September 11, 2001 terrorist attack. Preliminary analysis shows that rates of PTSD at two years following the attack were twice as high among those who were present, during the attack, and four times higher among those who were also injured, during the attack. Results were presented at the American Psychiatric Association, International Congress of Military Medicine, and the International Society of Traumatic Stress Studies Scientific Meetings; this work is undergoing peer review for publication and was also reported in the Washington Post on September 15, 2004, *Research Measures Emotional Toll of 9/11: Depression Among Major Residuals*. Dr. Grieger and his colleagues were published in peer-reviewed publications, throughout 2004.

Colonel Molly J. Hall, MC, FS, USAF, Associate Professor, USU SOM Department of Psychiatry, Director, Bioterrorism Education Project, Assistant Chair for Medical Student Education, has conducted extensive educational consultation on the psychological impact of disaster, terrorism and bioterrorism. She co-authored multiple articles on the psychological impacts of bioterrorism and provided teaching and training to multiple State and Federal agencies, including the Central Intelligence Agency, the Maryland State Office of Public Health Preparedness, and the Arizona State Emergency Management Authority. She provided ongoing consultation to the Maryland, Virginia, Washington D.C. Council of Government Bioterrorism Task Force, and The Animal Services Committee. And, in February of 2004, Doctor Hall was recognized by Representative Steve Israel as a Local Legend from New York; this is an honor bestowed upon women physicians who have demonstrated commitment, originality, innovation, or creativity in their field of medicine. The Local Legend recognition is a companion project to an exhibition created by the National Library of Medicine, entitled, *Changing the Face of Medicine: Celebrating America's Women Physicians*. In July of 2004, CSTS faculty led by Dr. Hall and Dr. Fullerton, convened a workshop on ***War Psychiatry Today: Lessons from OEF and OIF***. The workshop examined the experience and preparation of military physicians for combat support in the Global War on Terror. Workshop goals were to identify gaps in current medical training to better prepare physicians to give appropriate mental health care in light of the complexities posed by modern warfare; to understand the new challenges that modern warfare places on psychiatrists at all levels of care, from the combat zone through the return to the United States; and, to define needs for mental health support in the rehabilitation and reintegration of the wounded back into their units and society.

Captain Derrick A. Hamaoka, USAF, MC, Instructor, USU SOM Department of Psychiatry, was actively involved with projects throughout the CSTS and published multiple articles with his CSTS colleagues that were accepted by peer-reviewed publications.

He Li, M.D., Ph.D., Assistant Professor, USU SOM Department of Psychiatry, one of the Department's biological psychiatry researchers, published his findings in the Journal of Molecular Neurobiology, the Journal of Neuropsychopharmacology, and the Journal of Neuroscience, during the past year. Dr. Li's current research continues to be focused on examining the effects of stress-related neurochemicals on amygdala neurons and on synaptic transmission in the intra- and inter-amygdala neuronal circuitry. Over the course of the last several years, Dr. Li and his research group have developed and refined an animal model of post-traumatic stress disorder (PTSD) that allows the observation of cellular changes in learning and memory that may be altered when an animal is subjected to stress. Dr. Li and his group are now positioned to examine whether stress-related changes can be observed at the level of gene

expression in amygdala neurons. These findings have particular significance since PTSD costs Americans an estimated $45 billion per year (prior to 9/11) in hospitalizations, lost productivity, etc. More recently, threats of bioterrorism, the continuing conflicts in Iraq and Afghanistan and the recent Tsunami have increased the number of individuals exposed to episodes of traumatic stress. Current treatment options are limited and often accompanied by adverse side effects. The findings obtained from the animal model by observation at the cellular, molecular, and genetic levels have great potential to facilitate the development of improved treatment strategies for PTSD.

Doctor Elizabeth Osuch, Assistant Professor, USU SOM Department of Psychiatry, focused her research on the study of neurobiological and behavioral effects of exposure to extreme environmental stress. This includes functional and brain imaging studies in traumatized populations, such as people who have been in motor vehicle collisions. It also includes a major, new national initiative to develop a postmortem brain tissue collection for the study of the pathology of exposure to extreme stress. Dr. Osuch's research is funded by an R01 grant from the National Institute of Mental Health; the project studies traumatized populations, such as individuals who have been in motor vehicle collisions, using functional brain imaging to understand the neurological and physiological correlates of acute stress and post traumatic stress disorder.

Colonel E. Cameron Ritchie, MC, USA, Associate Professor, USU SOM Department of Psychiatry, was a student in the USU SOM Master of Public Health Degree Program, during 2003. Under the mentorship of USU CSTS faculty, Doctor Ritchie established an international presence working in Israel, Egypt, and Baghdad with State Department psychiatrists to improve mental health assessment and interventions following terrorism intrinsic to the Iraqi conflict. She coordinated a planning meeting held at USU with representatives from the State Department, the National Institutes of Mental Health, Substance Abuse and Mental Health Services Administration, the World Bank, and non-governmental relief organizations on the DoD mission and objectives for assisting in rebuilding the Iraqi Mental Health System. During January of 2005, USU was notified that Dr. Ritchie had received the AMSUS Porter Award for Psychiatry and the Bruno Lima Award from the American Psychiatric Association.

Nancy T. Vineburgh, Assistant Professor, USU SOM Department of Psychiatry, an expert in corporate health promotion and public education of mental health, directed the creation of an Office of Public Education and Preparedness (OPEP), under the USU Center for the Study of Traumatic Stress (CSTS), in June of 2003. The new office is charged with identifying programs and partnerships that will advance CSTS and USU's visibility, expertise, and funding for preparedness programs, especially in the workplace. Dr. Vineburgh published *The Power of the Pink Ribbon: Raising Awareness of the Mental Health Implications of Terrorism* in Psychiatry Interpersonal and Biological Processes, in the Summer of 2004, as part of a special edition devoted to the trauma and response of the 9/11 attacks.

(*See Section II, RESEARCH CENTERS AND PROGRAMS, USU SOM Department of Psychiatry and the Center for the Study on Traumatic Stress, for additional information on the faculty of the Department of Psychiatry*.)

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Radiology and Radiological Sciences - School of Medicine.

Individual Contributions.

James G. Smirniotopoulos, M.D., Professor of Radiology and Radiological Sciences, Neurology, and Biomedical Informatics, and Chair, Radiology and Radiological Sciences, developed the *MedPix* System to offer medical students, researchers and clinicians a descriptive on-line database housing medical case examples. The database provides a fully-functional archive of clinical photographs and radiologic images, primarily of abnormal and disease conditions. Today, there is a shared Internet teaching file filled with a variety of illustrated medical cases available to anyone interested in learning more about an affliction or in sharing information and images from cases they have seen. *MedPix* is now recognized as a powerful teaching tool for residents and the *MedPix* Program has received approval for providing on-line continuing medical education (CME) and continuing nursing education (CNE). The *MedPix* Program takes advantage of the *MedPix* Radiology Teaching File and provides one hour of Category 1 CME or 1.2 hours of CNE for every four *MedPix* cases. To date, *MedPix* has provided more than 4,000 hours of continuing medical education. USU now supports all of the DoD Diagnostic Radiology Residency Programs, by administering and hosting a common teaching file shared by all. *MedPix* has over 15,000 registered users, including active duty and civilian personnel world-wide, although registration is not required for simple case review. During 2004, the *MedPix* database was upgraded to include a secure web server for log-in and user administration; now *MedPix* routinely delivers more than one gigabyte of data each day to more than 7,000 unique web visitors. *MedPix* has delivered more than 20 million pages since September 3, 2000; it is one of the longest running *Case of the Week* programs in the world. The *MedPix* Teaching File is an essential part of the Radiology Residency certification process; and, it is housed and managed by the USU Radiology and Radiological Sciences Staff, led by Dr. Smirniotopoulos. *MedPix* supports this requirement for all of the DoD Radiology GME programs, to include: the Tripler Army Medical Center at Honolulu, Hawaii; the Madigan Army Medical Center in Takoma, Washington; the Naval Medical Center at San Diego, California; the combined Wilford Hall Air Force Medical Center and Brooke Army Medical Center Program in San Antonio, Texas; and, the new program at the Naval Medical Center in Portsmouth, Virginia. In February of 2005, the American College of Radiology signed a contract to use the patent-pending *MedPix* technology for its members.

Dr. Smirniotopoulos was appointed by **Doctor Winkenwerder, the Assistant Secretary of Defense for Health Affairs,** as the DoD Representative to the National Advisory Council for Biomedical Imaging and Bioengineering; in addition, this committee provides advice and consent for the newest component at the National Institutes of Health (NIH), the National Institute for Biomedical Imaging and Bioengineering. The USU President appointed Dr. Smirniotopoulos to Chair the USU Strategic Planning Committee. During 2004, the USU Strategic Planning process continued to move forward. The University Plan has now been complemented by documents from the SOM, the GSN, and AFRRI. All of these plans show concordance with the overall goals set for USU by the Department of Defense and the United States Congress. During 2004, Dr. Smirniotopoulos participated in 14 CME courses, including a two-week course in three European cities: the Azores, Portugal; Madrid, Spain; and, Vienna, Austria; and, he was a Visiting Professor at over 20 academic medical centers. At the world's largest Radiology meeting, the Radiological Society of North America, Dr. Smirniotopoulos served as faculty for three refresher courses and had two scientific exhibits.

Under the direction of **Dr. Maurice Reeder**, the Department of Radiology and Radiological Sciences completed an eight-week intensive course in Tropical Radiology called *Teach the Teachers in Tropical*

Imaging. This course was sponsored by Radiology's largest specialty organization, the Radiological Society of North America. The course was limited to eight African Radiologists, who will now return to their home countries of Nigeria, Uganda, and Madagascar to *spread the word* about Radiology in the diagnosis and management of Tropical Diseases.

Colonel David S. Feigin, MC, USA, Professor, USU SOM Department of Radiology and Radiological Sciences, has been a full-time faculty member, since 1997. He continues to teach in several post-graduate radiology courses and as a Visiting Professor at various university radiology departments. Dr. Feigin has served eight times as an Examiner for the Oral Examination of the American Board of Radiology. He holds professorships and teaches regularly at both George Washington University and Georgetown University. He also participates frequently in the education of military radiology residents in San Antonio, Texas, and physicians and nurses stationed in Korea and Europe.

Colonel Tim Sanders, USAF, MC, Assistant Professor, USU SOM Department of Radiology and Radiological Sciences, and Radiology Consultant to the Air Force Surgeon General, has been a member of the Department, since 2003. Dr. Sanders is a Musculoskeletal Radiologist and former Chair of Radiology at the Wilford Hall Air Force Medical Center.

Lorraine G. Shapeero, M.D., Associate Professor, USU SOM Department of Radiology and Radiological Sciences, and Director, of the Bone and Soft Tissue Sarcoma Program, the United States Military Cancer Institute (USMCI), was selected for the 2004 and 2005 Editions of Marquis' Who's Who in America; for the 2005 Edition of Marquis' Who's Who in the World; and, for the 2005 Edition of Who's Who in Science and Engineering. Dr. Shapeero was also an invited speaker at the International Skeletal Society; she serves on the Board of Directors of the Association of University Radiologists; and, she is a member of the Executive Committee of the Alliance of Medical Student Educators in Radiology. The mission of these organizations it to optimize the teaching, research, and clinical practice of radiology for radiologists, radiological scientists, residents, fellows, and medical students, in both military and civilian medicine. Dr. Shapeero also serves on the Editorial Board of Academic Radiology.

(*See Section I, Informatics - An Expanding and Essential Component of Education in the Health Sciences, for additional information on the Department of Radiology and Radiological Sciences*.)

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Surgery - School of Medicine.

***Departmental Background and Activities*.**

The ***USU Norman M. Rich Department of Surgery*** is comprised of a very talented, eclectic group of surgeons, who are involved in a variety of ways to provide extramural support for Clinical Services in the National Capital Area (NCA), and beyond. The faculty includes billeted Federal (civilian) and uniformed (active duty) officers, as well as, non-billeted members. The faculty can truly be described as *distinguished*.

Members of the faculty have achieved prominence in surgery; and, they are nationally and internationally recognized as surgical leaders. They have served as Chairmen of Surgery in a variety of hospitals; they have also served as Hospital Commanders; and, they have been Program Directors. One recently-retired member of the faculty was formerly the Dean of the College of Medicine at the University of Virginia. Another active member was formerly the personal physician to Ronald Reagan, Former President of the United States. The faculty has been responsible for writing and publishing extensively. In addition, the faculty actively supports a number of professional organizations; and, members of the faculty serve, or have served, in leadership positions in many of those organizations. The faculty, therefore, is uniquely able to serve as a most positive role model for medical students who are interested in pursuing the fine art and science of surgery. Together, the faculty is involved in clinical support, teaching, research, readiness, and administrative support.

Clinical Support. Faculty members are credentialed at a variety of Federal and civilian hospitals in the NCA and elsewhere. They see and treat patients, help to conduct clinics, and are engaged in all forms of inpatient and outpatient care. Selected examples of clinical activities include conducting endoscopic clinics, doing endoscopic surgery, manning breast clinics, chairing cancer committees, and performing endocrine surgery. It is estimated that the clinical activities of the Department's surgical faculty account for over $4,470,164 in savings to the Nation each year, as cost avoidance generated for the Department of Defense (*as documented in the USU 2004 Cost Avoidance Fact Sheet*); the Department of Surgery far outstrips all other USU SOM Departments in providing clinical services at the Military Treatment Facilities. The faculty participates in clinical activities in a variety of ways. At times, they are present in clinic as consultants to residents and students. At other times, they have primary responsibility for patients, with a busy in-patient service to manage. The Department has several faculty members who spend most of their clinical time at a local *Level 1* trauma center, MedStar; they have been most involved there, seeing and treating large numbers of trauma victims from the Washington Capital Area. Because of their presence at MedStar, the Department is able to rotate third-year medical students to the site, which gives them initial trauma-care experience. Also, residents from the Department's military centers go to MedStar for trauma experience. Several faculty members also have appointments at the National Institutes of Health (NIH).

Teaching. Medical education is a life-long process. In developing the Department's educational philosophy, primary consideration is given to curriculum, content and the amount of knowledge and skills that must be learned. In addition, the specifics encountered in a military-oriented medical school and the methods of transmitting this information are blended into the traditional medical school knowledge base. The overall purpose of the surgical education program is to help the students to become life-long learners, able to apply knowledge to chosen careers in surgery, or to relate learned surgical knowledge, in a comprehensive manner, to other chosen career fields. This is accomplished by providing opportunities to learn what is known and to identify that which is unknown. In addition, students are encouraged to acquire skills in order to critically appraise, honestly debate, and respectfully disagree on clinical and technological matters. The developed curriculum includes progressive clinical knowledge with the integration of basic science and translation research, which offers a comprehensive and balanced learning environment. The *Socratic* method of learning is presented in a collegial and supportive manner, with curricular emphasis on the development of problem-solving and critical thinking. Learning gaps are identified, highlighted and discussed in order to stimulate faculty motivation and refocus on current teaching methods.

Faculty members are first, and foremost, teachers. They are teaching at every level, including the first-year ***Anatomy Course***, the third-year ***Clinical Rotations***, the fourth-year ***Subspecialty Rotations***, the ***Internship and Residency Rotations***, and there is some faculty participation with ***Post-Residency***

Fellowships. Several faculty members have volunteered to be in mentoring programs for first and second-year medical students. Some faculty members are also mentoring residents in research projects. Approximately half of the instructors for this course have backgrounds in surgery. This particular course has served as a perfect opportunity to begin to explain the fine art and science of surgery to the students and to relate anatomy to clinical conditions. Because of this early engagement of medical students, the Department is able to see an increase in those who wish to choose surgery as their specialty, following graduation. Many of the faculty have participated, as well, in postgraduate courses, taught at both USU and outside of the University, including an extensive program of international courses. These courses have included ***Videoendoscopy***, ***Sentinel Lymph Node Biopsy***, ***Emerging Surgery Technology***, ***Surgical Ultrasound***, and ***Complex Laparoscopy***, etc. A recently instituted ***Course on Emergency War Surgery*** has been most successful in preparing Army surgeons, in Europe, for deployment to Iraq; and, the course has been taught in Wuerzburg and Heidelberg by **Doctors Hutton, Minken, Burris,** and **McHale**. This latest course continues the Department's tradition of taking education to uniformed physicians overseas, and by doing so, greatly enhancing their opportunities to keep abreast of new techniques. The USU National Capital Area Medical Simulation Center (SIMCEN) is headed by a member of the surgery faculty; he is recognized as a national leader in teaching through models and simulation. The Department continues to receive high interest, from outside of USU, in its educational endeavors at the SIMCEN and frequently welcomes international visitors. Such diverse topics as robotics, haptics, telemedicine, virtual reality, and computerization of medicine are addressed at the SIMCEN. The SIMCEN is where each third-year medical student is exposed to general surgery, beginning with the first day of the third-year ***General Surgery Rotation***. Each student is taught to do a surgery history and physical through the use of actors, videotapes and immediate feedback techniques; each is exposed to ultrasound principles, bronchoscopy, knot tying, resuscitation, and evaluation of the acute abdomen, etc. Following the first day at the SIMCEN, the third-year student has two days of hands-on surgery laboratory training, using a porcine live model under general anesthesia. The first day involves the abdomen, with a variety of procedures (splenectomy, gastrotomy, pyloroplasty, small bowel resection, and anastomosis, etc.); and, during the second day, the student is taught to insert a chest tube, perform a thoracotomy, a left pneumonectomy, and repair the aorta, etc. The faculty members all participate in this important three-day introduction to surgery.

Representing both the School of Medicine (SOM) and the University, the Department of Surgery has been actively involved in the development of the *Diploma in the Medical Care of Catastrophe* under the Auspices of the Apothecaries of London. This multi-disciplinary activity supports the SOM Dean's emphasis that the faculty should be a Community of Scholars. The examination is held at USU each Spring; until last September, the only recognized location, outside of London, for the examination. There are 33 Diplomats at USU. Related to the Anglo-American Exchanges and assisted by **Professor James Ryan of London**, who holds the first International Professorship at USU, there exists a Memorandum of Understanding between the Royal College of Surgeons of England and the Royal Defence Medical College with the USU Department of Surgery to conduct ***Definitive Surgical Trauma Skills***, with an average of three courses each year, in London, to prepare Military Surgeons for deployment to Afghanistan and Iraq.

Research. The faculty is involved in a number of large and important research projects, some of which have recently borne fruit in actual clinical application in wartime scenarios. The Department has been responsible for the development of novel, new products, which stop bleeding on the battlefield; and, which have been directly responsible for the saving of the lives of soldiers in Iraq. Many of the soldiers in Iraq are currently carrying ***QuikClot***, which was developed by several faculty members, in the USU Department of Surgery. Also, there are two large projects for the detection and treatment of breast cancer, one based at the Bethesda National Naval Medical Center (NNMC) and the other at the Walter Reed Army Medical Center (WRAMC), both are staffed and supported by the Department's faculty members. These large and

sophisticated projects are Federally funded and involve clinical patient care, basic science research, and genetics with dedicated laboratories and suites at Bethesda and WRAMC, offering excellent patient access and care. In addition, there is an internationally recognized and extremely successful program originating at the Walter Reed Army Medical Center, which addresses prostate cancer, the ***Center for Prostate Disease Research (CPDR)***; the CPDR is administered and staffed by faculty from the Department of Surgery. This effort to address prostate disease is Federally funded and has earned recognition by the national media for the Department and its faculty. The number and quality of papers produced by the CPDR is unparalled. The CPDR has a large, separate facility located in Rockville, Maryland, as well as a presence at WRAMC, NNMC, and USU. In other areas, as well, faculty members have achieved distinction, throughout the Nation, as leaders in research in their respective fields. **Dr. William Bolger**, for example, is known in sinus surgery for a procedure, which he invented, called *bolgerization*; he is a reviewer for five *ENT* journals, a member of a national *ENT* committee, and a member of the Board of Directors of the American Rhinologic Society. Besides the above-mentioned activity, other important clinical trials are being conducted by faculty members at the various hospitals, especially in colon cancer and venous diseases, etc.

Readiness. The faculty of Surgery is fully committed to ensuring and supporting Military Readiness, in a variety of ways. Some active-duty members have recently been deployed. Most faculty members are continuing to teach, or direct, ***Advanced Trauma Life Support (ATLS) Courses***. **Colonel David Burris, United States Army, is the Chief of the Military Region (XIII) of the American College of Surgeons Committee of Trauma (ACS-COT)** and oversees all ATLS in the military. **Dr. Mark Bowyer is the Air Force State Chairman in the AXS-COT and oversees ATLS for the Air Force and at USU**. ATLS teaches the medical students about proper trauma care and prepares them to go to the field and save lives. The faculty have been at the forefront of new and innovative ways to teach ATLS, using mannequins instead of animal models, through a very successful and on-going program. The Department averages about one ATLS Course every two, to three, months at USU. In addition, faculty members, at times, help to teach ATLS at outside courses, such as at NNMC and for other units deploying to combat situations.

Administrative Support. Faculty members have been most active in providing administrative services to the University. The Department has faculty members on the following USU committees: Admissions; Promotions; the Institutional Review Board; Curriculum; the Faculty Senate; and, the USU Space Committee. Currently, the Department has four members recently elected to the Faculty Senate, to include the Secretary. The Department of Surgery has faculty members who have conducted External Reviews of local residencies, as coordinated through WRAMC. Many of the Department faculty spend considerable time interviewing potential medical students; and, they work closely with the Promotions Committee to ensure that USU enrolls only the best and the brightest students. Faculty members continue to serve on search committees, to include those charged with the selection of Department Chairs. These administrative support roles are dynamic and changing; and, it is impossible to list every way in which the Department is involved. Suffice it to say, that on all fronts, the Department of Surgery is totally supportive of the USU community and continues to enthusiastically participate in the entire spectrum of research, teaching, clinical endeavors, medical readiness, administrative support and community service.

Individual Contributions.

Colonel David Burris, MC, USA, Associate Professor and Interim Chair, USU SOM Department of Surgery, received invitations to serve as a Visiting Professor at prestigious universities,

including Harvard and Stanford. He was also the Key Speaker at the Massachusetts Chapter of the American College of Surgeons. Dr. Burris has assumed the responsibility for the completion of the Combat Surgical Manual, which replaces the former NATO Handbook. In addition, Dr. Burris served as the co-editor of the Third United States Revision of Emergency War Surgery, published by the Border Institute, in late 2004. And, Dr. Burris is also the Chief Editor of the *Festschrift Papers*, which was published in the World Journal of Surgery, in the Spring of 2005.

In early January 2005, thirty-two students participated in an upper and lower limb trauma course geared toward the treatment of combat casualties. The Orthopedic Division of the USU SOM Department of Surgery, in conjunction with the USU Anatomical Teaching Laboratory, coordinated and conducted a highly successful course much appreciated by the attendees. The speakers, instructors, equipment, computers, and facilities provided maximum opportunities to apply external fixators and to contemplate care in theater. Dr. Burris stressed the on-going commitment of the Department of Surgery to developing courses and educational programs for the care of combat casualties since the earliest days of the Department, beginning with Dr. Norman Rich. A family of courses such as the ***Definitive Trauma Skills Course***, held in conjunction with the Royal College of Surgeons of England, the Trauma Refresher Course for Surgeons conducted by the United States Air Force, and the Advanced Trauma Operative Management Course of the American College of Surgeons have been developed through the participation and contributions of USU and military surgeons and their civilian colleagues. These courses cover every aspect of combat trauma care. As mentioned above, the latest updated version of War Emergency Surgery, was completed, during late 2004, and distributed. This text will be used as the focus to unify the ***Combat Casualty Care Courses*** conducted by the three branches of the Services into a standard modular course. The USU Department of Surgery takes great satisfaction in knowing that through these efforts, combat casualty care of surgical patients will continue to save many lives and limbs.

Norman M. Rich, M.D., FACS, Professor and Founding Chair, USU SOM Department of Surgery, joined 12 of the world's most prominent surgeons, on May 27, 2004, when he was named the Michael E. DeBakey Award recipient by the Michael E. DeBakey International Surgical Society. DeBakey, an internationally renowned cardiovascular surgeon, medical inventor, medical statesman, and teacher has trained thousands of surgeons, since 1948. In 1977, the Michael E. DeBakey International Surgical Society was founded with the goal of perpetuating DeBakey's vision through scholarship, training, and recognition. Dr. Rich was presented the award at the Society's 25th Congress, held in Houston, Texas, for his significant contributions to medicine and surgery over the past 40 years, to include the establishment of the Vietnam Vascular Registry and his service as the Chair of the Surgery Department at USU. In June of 2004, the 2nd Edition of Dr. Rich's textbook, Vascular Trauma in War and Peace, was published by W.B. Sanders Company.

A ***Festschrift*** in honor of Dr. Rich was held in conjunction with the USU Surgical Associates Day, on March 26-27, 2004. National and International Surgical Colleagues honored Dr. Rich for his 25 years of service to medical education and patient care as the first Chairman of the USU SOM Department of Surgery. Thirty contributors to the program documented the achievements of Dr. Rich in academics, research, and patient care; The World Journal of Surgery published these articles, in the Spring of 2005.

John F. Potter, M.D., Professor, USU SOM Department of Surgery, Director, United States Military Cancer Institute, was designated by the Deputy Assistant Secretary of Defense for Clinical and Program Policy, as the DoD Representative to the National Dialogue on Cancer (NDC). The NDC consists

of a group of delegates from academia, government, and the private sector; it is committed to advancing the cause of cancer research, prevention, and patient care.

J. Leonel Villavicencio, M.D., Professor, USU SOM Department of Surgery, was presented with the American Venous Forum's first Founder's Award. The award was given for *exceptional and tireless contributions to the American Venous Forum and to the welfare of patients with venous diseases*.

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ARMED FORCES RADIOBIOLGY RESEARCH CENTER
Publications Summary
2001-2004

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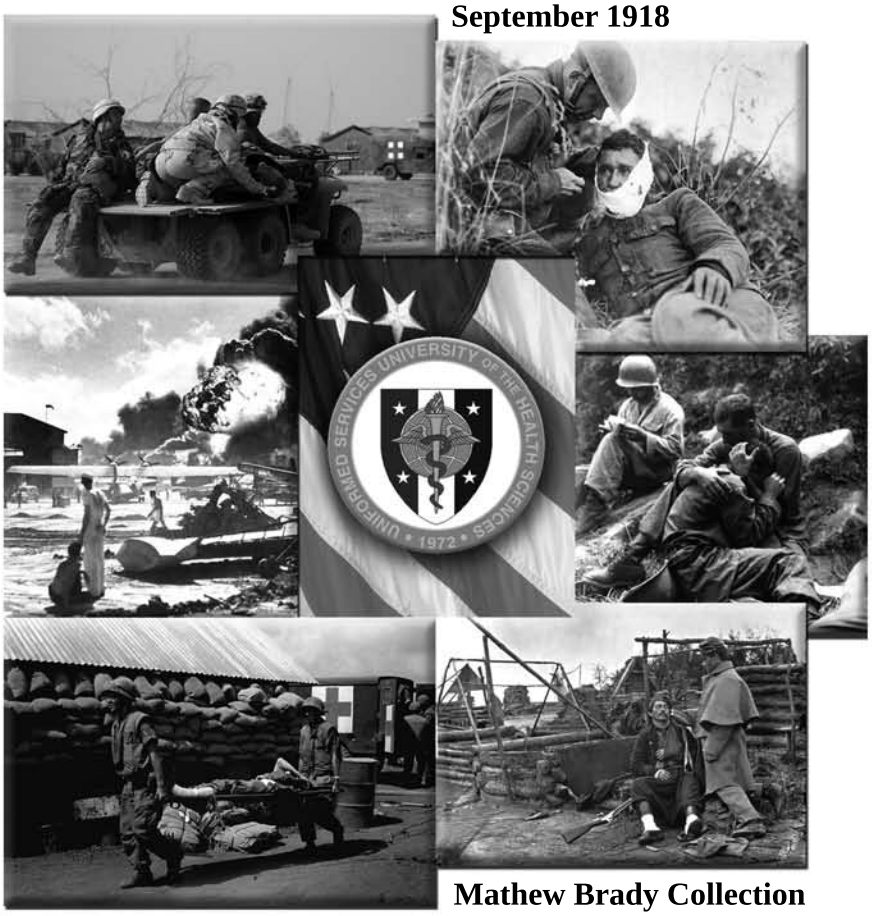

US Navy Archives, WW II
Pearl Harbor
December 1941

Time Life
South Korea
1950

Mathew Brady Collection
Civil War, about 1864

Hutton-Getty Archives
Vietnam, 1966

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